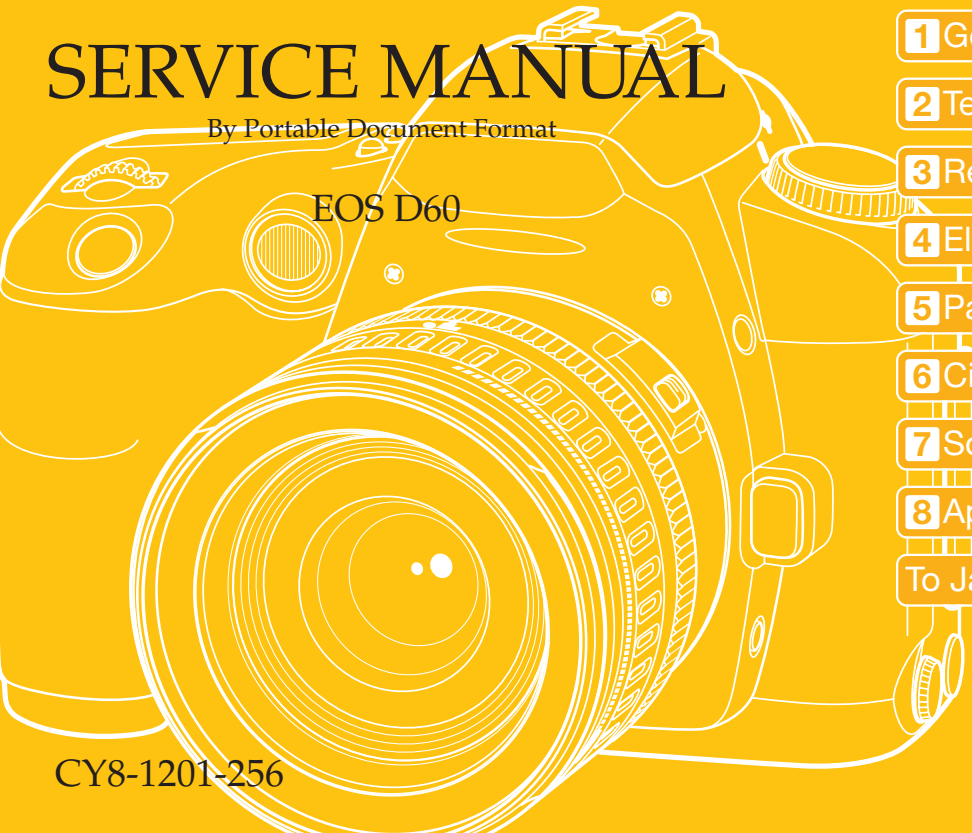
English Edition

SERVICE MANUAL

By Portable Document Format

EOS D60



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To Japanese Edition

CY8-1201-256

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EOS D60 **C12-6011**

SERVICE MANUAL

Technical Documents

Application

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PREFACE

This manual contains information for servicing the product, and has the following sections:

Part 1 General Information

Provides the basic information needed to understand the product.
(Operating instructions are not included. Refer to the products instruction book if necessary.)

Part 2 Technical Information

Provides technical information about the mechanism and electronics of the product.

Part 3 Repair Information

Provides information about ths tools and expendables required for disassembly, reassembly, adjustment and measurement of the product, and their locations and method of use.

Part 4 Electrical Adjustments

No electrical adjustments for this product.

Part 5 Parts Catalog

Part 6 Circuit Diagrams

Part 7 Software Information

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Part 1

General Information

1. FEATURES

1.1 Ultra-fine, high-image quality about 6.30 megapixel CMOS sensor

- Newly developed, large, single-plate CMOS sensor of 22.7 x 15.1 mm effective size
- Effective pixels: Approx. 6.30 megapixels (6.52 megapixels total)
- Effective angle of view: Equivalent to 1.6x normal EF lens focal length

1.2 Retains EOS D30's Outstanding Features

- Continuous shooting speed of approx. 3 fps and maximum burst of 8 shots
- Same features, performance, operation ease, and shooting-priority concept as the EOS D30
  - Completely compatible with all Canon EF lenses
  - Compatible with EOS D30 system accessories
  - Three AF points and three AF modes (ONE SHOT, AI SERVO, AI FOCUS)
  - 35-zone AE sensor, three metering modes (evaluative metering, partial, centerweighted average)
  - Eleven shooting modes (8 programmed AE modes, Tv, Av, M)
  - 1/4000 sec. - 30 sec., bulb, X-sync at 1/200 sec.
  - ISO speed: 100, 200, 400, 800, 1000
  - E-TTL autoflash (with built-in flash and EX-series Speedlites)
  - Built-in flash: Guide No. 12 (at ISO 100 in meters)
  - Single/continuous shooting, self-timer
  - Dioptric adjustment from -3 dpt. to +1 dpt.
  - Compatible with CF card Type I/II
  - Seven white balance modes
  - Menu settings, Custom Functions
  - Noise reduction during long exposures
  - 1.8-in. TFT liquid-crystal monitor
  - USB interface, video output
  - Dimensions: 149.5×106.5×75 mm / 5.9×4.2×3.0 in, weight 780 g /27.5 ounce
  - Bundled software for image manipulation, etc.

1.3 User Suggestions Incorporated for Better Basic Performance

- Superimposed display for AF points
- LCD panel (EL) illumination
- Better AF performance in low light (EOS D30: EV2 - EV18 → EOS D60: EV0.5 - EV18)
- Shorter and more stable shutter release time lag
- Improved metering table for stable exposure control
- Additional viewfinder information (Flash exposure compensation icon, maximum burst indicator, and remaining shots counter added.)
- Processing parameters settable with the on-screen menu
- More menu functions and Custom Functions
- Shorter startup time from power-off

2. OVERVIEW

2.1 EOS D60 body

While retaining the best features of the EOS D30, the EOS D60 has many more pixels and new and improved specifications desired by users. The EOS D60's improvements over the EOS D30 are outlined below. (All specifications not mentioned below are the same as the EOS D30.)

1) Imaging element

Fig. 1-1 CMOS sensor

- Newly developed, large CMOS sensor with about 6.30 megapixels
  The large CMOS sensor has 6.30 effective megapixels (out of a total of about 6.52 megapixels), an effective sensor size of 22.7×15.1 mm (same as the EOS D30's), aspect ratio (2:3), large single CMOS sensor and separate filters for the three primary RGB colors. It boosts the camera to the top of its class for fine image detail and image quality.
- Red ghost countermeasures
  With the EOS D30, red ghost outline sometimes appeared near a bright light source or at a symmetrical point in the field. As a countermeasure, the EOS D60's low-pass filter configuration has been modified. The IR filter is a hybrid with a coating and absorption function to suppress red ghost.

2) Viewfinder

- Superimposed (SI) display
  The same SI optics found in the EOS 55/ELAN II/50 has been incorporated in front of the pentaprism so that the AF points can be illuminated.
- Easier manual focusing
  The New Laser Matte focusing screen has improved diffusion characteristics to make it easier to distinguish peak focus.

3) AF

- Improved AF operation in low light
  With the EOS D30, AF operation was possible in the EV 2 - EV 18 range. This has been improved to EV 0.5 - EV 18 (normal temperature with ISO 100) with the EOS D60. The algorithm for the AF-assist beam has also been modified to improve AF operation in low light.

4) Metering and exposure control

- Shorter and more stable shutter release time lag
  With improved firmware, the shutter release time lag is much shorter and more stable than the EOS D30's.

- Improved metering algorithm
  Some users complained about how the meter reading changed even after the picture was slightly recomposed. To address this problem, the α compensation steps has been made finer (1/4f instead of 1/2f).

5) Drive

- Continuous shooting speed: Approx. 3 fps, Maximum burst: 8 frames
  The EOS D30's maximum burst during continuous shooting in the Large/Fine mode is approx. 8 shots. With other recording/compression modes, this maximum burst increases or decreases.
  The EOS D60 has a larger buffer memory to better handle the image's larger data resulting from the high pixel count. The maximum burst of 8 shots can be attained regardless of the image-recording format and ISO speed. The maximum burst countdown is also displayed at the bottom of the viewfinder. With the EOS D30, the maximum burst was 3 shots in the RAW mode.
  With the EOS D60, it is now 8 shots. Thus, during continuous shooting, the RAW mode has become more practical.

6) Image-recording format

- Middle/Fine and Middle/Normal added

Recording Format		Recording Resolution	File Size (Approx. MB)	Compression System
Large	Fine	3072×2048	2.5	JPEG
	Normal	(Approx. 6.29 megapixels)	1.3	
Middle	Fine	2048×1360	1.4	
	Normal	(Approx. 2.78 megapixels)	0.7	
Small	Fine	1536×1024	0.9	
	Normal	(Approx. 1.57 megapixels)	0.5	
RAW		3072×2048 (Approx. 6.29 megapixels)	7.4	Lossless compression RAW

- Extracting JPEG-Middle/Fine files from RAW files
  During RAW mode shooting, a JPEG-Middle/Fine file is also simultaneously recorded within the .crw file. The JPEG-Middle/Fine file can be extracted from the RAW file and saved (.jpg) with the dedicated driver (provided).
- File size and compression rate settable in Programmed Image Control modes

7) Information display

- More viewfinder information provided
  At the bottom of the viewfinder, the following information has been added: 1. Flash exposure compensation, 2. Maximum burst during continuous shooting, 3. Shots remaining. (Since SI display is provided, there is no AF point icons.)

Fig. 1-2 Comparison of viewfinder information.

- LCD panel illumination provided
  The LCD panel now has EL backlight illumination (bluish-green). When it is turned on with the on-screen menu (off by default), the illumination turns on when you press the SET button.
- LCD monitor easier to read
  The TFT monitor's sheet material has been changed so that the visibility at higher angles (over 40 deg. vertically and horizontally) is brighter.

8) Menu functions

- Processing parameters settable with the camera
  With the camera's on-screen menus, you can set processing parameters (contrast, sharpness, color saturation, and the newly added color tone). You can set each parameter to one of three settings (-, 0, +). Up to three sets of parameter settings can be set and registered. (The parameters cannot be saved with the bundled software.)
- New menu items added
  - Image-recording quality/Compression rate: Middle/Fine, Middle/Normal
  - LCD panel illumination: 0: Off, 1: On
  - C.Fn setting cancel: Cancel/OK
  - Firmware Ver. 1.0.0

9) Custom Functions

- New Custom Functions and modified settings

New Custom Functions

C.Fn No.	Custom Function	Setting	Description
C.Fn-14	Superimposed display	0	On
		1	Off
C.Fn-15	Shutter release w/o CF card	0	Possible without CF card
		1	Not possible

Modified Settings

C.Fn No.	Custom Function	Setting	Description
C.Fn-5	AF-assist beam/Flash firing	0	Emits/Fires
		1	Does not emit/Fires
		2	Only ext. flash emits/Fires
		3	Emits/Does not fire

* C.Fn-5: The flash firing can be set in addition to the AF-assist light setting.

Canceled item

C.Fn-1: Noise reduction during long exposures, 0: Off, 1: On

10) Design

The EOS D60's exterior design differs from the EOS D30 as follows:

- The main switch has a different shape (for easier operation).
- The color on the top of the mode dial is metallic titanium instead of black.
- The PC terminal and remote control terminal now share a joint rubber cap instead of a separate cap for each terminal.
- The shape of the interface-terminal cover (DIGITAL terminal, VIDEO terminal) is different.

- A "DIGITAL" nameplate is added on the lower right of the camera front.

11) Power source

- Shorter startup time from power off
  During the camera's auto power off, information about the recording medium's usable area is saved in the camera's memory. Therefore, when you turn on the camera again, the startup time is faster. This feature is especially effective for MicroDrive storage devices.
- Excellent shooting performance
  About 490 shots can be captured under the following conditions: fully charged batteries, 2-sec. image playback, Large/Fine recording format, and 50% flash use.

12) Dimensions and weight

Dimensions: 149.5 (W)× 106.5 (H)×75 (D) mm/5.9 (W)×4.2 (H)×3.0 (D) in (identical to EOS D30), Weight: 780 g/27.5 ounce

2.2 EOS D60 software

Besides Adobe Photoshop 5.0 LE, the following software for Windows and Macintosh will be bundled with the camera.
The software will be compatible with Windows 98 SE/Me/2000/XP and Mac OS 8.6 to 9.2.

1) Windows software

- TWAIN Driver
  - This TWAIN-standard driver operates under Windows 98SE or 2000. It enables you to view and download images and process RAW images stored in the camera's CF card while the camera is connected to a personal computer with the interface cable (provided).
  - The major specifications are the same as the EOS-1D's TWAIN Driver for Camera.

  * This driver can start up only within a TWAIN-compatible program (such as Photoshop LE).
- WIA Driver
  - Compatible with Microsoft's WIA (Windows Image Acquisition) standard, this driver works with Windows Me and XP.
  - When connected to a personal computer with the interface cable (provided), the camera can be mounted on the computer's Explorer desktop as if it were a removable disk. Explorer can then be used to download images without using any other driver.
- RAW Image Converter
  - Utility program that enables you to process RAW images saved on any drive.
  - Compatible with RAW images captured by the EOS D60, EOS-1D, and EOS D30.

- Zoom Browser EX
  - Image management utility program bundled with the latest PowerShot-series cameras. It has the added feature of processing EOS D60 RAW images. Only the Japanese version enables CIG (Canon Image Gateway) access.
- Photo Record
  - Layout printing utility program. It works with ZoomBrowser EX for printing with an automatic layout, printing on borderless perforated paper with Canon BJ printers, borderless (on all four sides) printing, etc.
- Remote Capture
  - Utility program that enables the camera to be controlled with a personal computer. The captured image can be received directly by the personal computer. Besides single-frame shooting, timer and interval timer operations are possible.
- PhotoStitch
  - Utility program for compositing multiple images into a single image. Images can be stitched together very precisely to create panorama photos, etc.

2) Macintosh software

- Photoshop Plug-in Module
  - This has the same features as the TWAIN Driver for Windows.
- USB Mounter
  - Utility program that enables the camera to be mounted on the Macintosh desktop as if it were a removable disk while the EOS D60 is connected to the Mac with the interface cable (provided). Images captured by the EOS D60 can then be easily copied to the Mac.
- RAW Image Converter
  - Macintosh version of RAW Image Converter for Windows.
- Image Browser
  - This image management utility program has the same features as Zoom Browser EX for Windows.
  - Regarding the printing function, it has the same features as PhotoRecord for Windows which is a printing layout program.
- Remote Capture
  - Macintosh version of Remote Capture for Windows.
- PhotoStitch
  - Macintosh version of PhotoStitch for Windows.

3. SPECIFICATIONS

1.Type

1-1 Type: Digital AF/AE single-lens reflex camera with focal-plane shutter (vertical travel) and built-in flash.
CMOS sensor for direct imaging

1-2 Image size: 22.7×15.1 mm

1-3 Compatible lenses: Canon EF lenses (Due to max. aperture metering, stopped-down shooting not possible.)

1-4 Lens mount: Canon EF mount

1-5 Lens restrictions: None

1-6 Lens focal length: Equivalent to 1.6x the normal lens focal length

2. Imaging Element

2-1 Type: High-sensitivity, high-resolution, single-plate, color CMOS

2-2 Image size: 22.7 mm×15.1 mm (APS C size)

2-3 Total pixels: About 6.52 megapixels: 3152 (H)×2068 (V) pixels

2-4 Effective pixels: About 6.30 megapixels: 3072 (H)×2048 (V) pixels

2-5 Pixel unit: 7.4 μm square

2-6 Aspect ratio: 2:3 (Vertical:Horizontal)

2-7 Color filter type: Three separate RGB primary color filters

2-8 Low-pass filter: Fixed in front of the imaging element

2-9 Cleaning mode: Provided with C.Fn-13-1

3. Recording System

3-1 Recording medium: Compact Flash (CF) card

3-2 Recording format: In accordance with the CF card standard
* Formatting possible with the EOS D60.
* The formatted CF card's volume name will be “EOS-Digital.”

3-3 Image recording format:

Recording Format		Recording Resolution	Compression System	Compression System
Large	Fine	3072×2048	JPEG	Low Compression
	Normal			High Compression
Middle	Fine	2048×1360		Low Compression
	Normal			High Compression
Small	Fine	1536×1024		Low Compression
	Normal			High Compression
RAW		3072×2048	Lossless RAW	–

3-4 RAW+JPEG simultaneous recording: A JPEG-Middle/Fine file is also simultaneously recorded within the .crw file. The JPEG-Middle/Fine file can be extracted from the RAW file and saved (.jpg) with the dedicated driver (provided).

3-5 File size and recording capacity:

Recording Format		File Size (Approx.)	Recording Capacity (Approx.)
Large	Fine	2.5 MB	48 shots
	Normal	1.3 MB	92 shots
Middle	Fine	1.4 MB	89 shots
	Normal	0.7 MB	172 shots
Small	Fine	0.9 MB	138 shots
	Normal	0.5 MB	255 shots
RAW		7.4 MB	15 shots

* The above specifications are based on ISO 100 and Canon's testing standards.
* Figures for the recording capacity apply to a 128 MB Compact Flash card.
* The actual file size and recording capacity depend on the subject, shooting mode, and ISO speed.

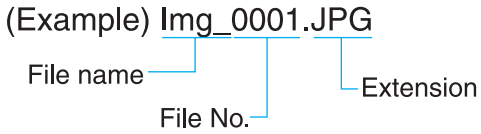
4. Information Recorded

(1) Shutter speed (2) Aperture (3) Exposure compensation amount
(4) ISO speed (5) Image-recording format (6) Shooting mode
(7) White balance (8) Metering mode (9) AEB (10) Flash mode
(11) Flash exposure compensation (12) AF mode
(13) Focal length used (14) Erase protection (15) Date (16) Time
(17) Folder name (18) File name/number (19) Active AF point
(20) Selected AF points (21) Camera owner (22) Body No.
(23) Drive mode (24) Flash sync timing (25) Custom Functions
(26) Processing parameters (27) Red-eye reduction

4-1 Image recording format: Complies with the Design rule for Camera File (DCF) standards.

4-2 Folder setting: Automatic

4-3 Image file name: The file name consists of file name, file number, and extension:



* The file number setting set with the on-screen menu will apply to the number.
* The file name and extension for RAW images will be CRW_ and CRW respectively.
* The extension for thumbnail images in the index display will be THM.
* Conforms with DCF File standards.

4-4 File No.: The following two types of file numbers can be set:
The captured images are automatically assigned a file number from 0001 to 9900. And each folder is assigned a number from 100 to 998.
(1) Serial numbering
* The serial numbering of captured images will continue even after you replace the camera's CF card.

(2) Auto reset
* When you replace the camera's CF card, the numbering will be reset, starting with 100-0001. If the new CF card already contains images, the numbering will continue from the last recorded image in the CF card.

4-5 Processing parameters: Besides the standard processing parameters applied by the camera automatically during image recording, the user can create and register up to three sets of parameters (contrast, sharpness, color saturation, color tone).
* The parameters can be set with the EOS D60's on-screen menu (not with the dedicated software).

5. Disk Drive

5-1 Type: Accepts CF card Types I and II; has cover
5-2 Slots: One
5-3 CF card access indicator: Blinking access lamp
5-4 Read error warning: The respective error warning is displayed on the LCD panel and in the viewfinder.
* Shutter release also locks.
5-5 CF card format: Enabled with the on-screen menu.
5-6 Misloading prevention mechanism: Provided

6. White Balance

6-1 Type: Auto white balance using the imaging element.
6-2 Modes: The LCD panel indicates the white balance mode.

WB Mode		Color Temperature (Kelvin)
Auto	①Auto	Approx. 3000-7000 K
	②Daylight	Approx. 5200 K
	③Cloudy	Approx. 6000 K
	④Tungsten light	Approx. 3200 K
	⑤Fluorescent light	Approx. 4000 K
	⑥Flash	Approx. 6000 K
Manual	⑦Manual*	Approx. 2000-1000 K

* Manual: First take a picture of a white subject serving as the white balance datum. Then set the manual WB mode with the on-screen menu and to specify that image.

6-3 White balance bracketing: Not provided

7. Viewfinder

7-1 Type: SLR-type, eye-level viewfinder (with fixed pentaprism but no condenser lens)
7-2 Focusing screen: Fixed, New Laser Matte screen
7-3 Dioptric adjustment: Adjustable from -3.0 dpt to +1.0 dpt.

7-4 Eyepoint: 20 mm
7-5 Coverage: 95% vertically and horizontally (For the effective pixels)
7-6 Magnification: 0.88X. (with 50mm lens at infinity, -1 dpt)
7-7 Viewfinder information: (1) On the screen
1) AF points
2) Partial metering circle (6.1 mm dia., approx. 9.5%)
(2) Below the screen
• Numerals and letters displayed by 7-segment LCD (yellowish-green)
3) Shutter speed (If there is a camera shake or the shutter speed is unsuitable, it blinks at 2 Hz as a warning.), bulb, FEL indicator
4) Aperture (If unsuitable, it blinks at 2 Hz as a warning.)
5) Max. burst during continuous shooting: Max. 8
6) Shots remaining (Displayed when the CF card has room for 8 or fewer images)
7) Busy (buSY)
8) CF card full warning (FuLL CF)
9) CF card error warning (Err CF)
10) No CF card warning (with C.Fn-15-1/CF)
• LCD mask (yellowish-green) display
11) AE lock/FE lock icon, AEB in-progress indicator (blinks at 2 Hz)
12) Exposure level (+/-2 stops in 1/3- or 1/2-stop increments)
12)-1: AE exposure compensation amount, 12)-2: Manual exposure level,
12)-3: AEB level, 12)-4: Red-eye reduction lamp on time display,
12)-5: Flash exposure compensation amount
13) Flash exposure compensation icon
14) Flash icon on: Flash ready
Flash icon blinking: Flash exposure beyond range warning during FE lock (2 Hz)
15) High-speed sync (FP flash)
16) AF focus confirmation light (blinks at 2 Hz when focus cannot be achieved), MF focus confirmation light
* The viewfinder information display cannot be turned off.
7-8 Mirror: Quick-return half mirror (Transmittance:reflectance ratio of 40:60)
7-9 Viewfinder blackout time: Approx. 300 ms at 1/60 sec. or faster shutter speeds.

7-10 Mirror lockup: Enabled with C.Fn-3-1
* Mirror locks up when the shutter button is pressed completely (SW-2). The picture is taken when the shutter button is let go and pressed completely again. Mirror lockup duration: Max. 30 sec. after which the mirror returns.

7-11 Mirror cut-off: No cut-off with lenses up to EF 600mm f/4

7-12 Depth-of-field preview: Enabled with depth-of-field preview button
* Enabled in the Creative Zone modes (disabled in Full Auto and Programmed Image Control modes).
* With Speedlite 550EX, 420EX, MR-14EX, or MT-24EX, pressing the depth-of-field preview button fires a modeling flash.

7-13 Eyepiece shutter: None (Eyepiece cover provided on strap)

7-14 Misc.: Eyecup Eb provided
*Angle Finder C, Angle Finder B, Magnifier S, Eyepiece Extender EP-EX15 attachable to eyepiece.

8. Autofocus

8-1 Type: Multi-BASIS, TTL-CT-SIR (TTL secondary phase difference detection)

8-2 AF points: Three

8-3 Focusing modes: (1) Autofocus
Switchable between the following three modes:

1) One-Shot AF
When focus is achieved, the autofocus operation stops and locks (AF lock).
* AF-priority (The shutter can be released only when focus is achieved.)
* During evaluative metering, AE lock is set when focus is achieved.
* In the partial metering and centerweighted average metering modes, exposure metering continues in real-time until the shutter is released.
* With applicable USM lenses, electronic ring manual focusing can be used after focus is achieved with One-Shot AF or if focus is cannot be achieved with One-Shot AF.
* Set automatically in the Portrait, Landscape, Close-up, and Night Scene modes.

2) Predictive AI Servo AF
Tracks subject movement and focuses continuously until the start of exposure.
* Single shot or 1st shot during continuous shooting: Shutter-priority (in Creative Zone modes)
Single shot or 1st shot during continuous shooting: AF-priority (in Full Auto and Sports modes)

From 2nd shot onward during continuous shooting: AF-priority

* Focus confirmation light provided. No focus confirmation beeper.
* If focusing is impossible, the • indicator blinks at 2 Hz.

3) One-Shot/Predictive AI Servo AF switching

For still subjects: When focus is achieved, AF operation stops (AF lock).

For moving subjects: Subject tracking and focusing continues until the start of exposure.

* With applicable USM lenses, electronic ring manual focusing can be used after focus is achieved with One-Shot AF or if focus is cannot be achieved with One-Shot AF.

(2) Manual focusing

After the lens focus mode is set to MF (or M), manual focusing is enabled with the focusing ring.

* During automatic AF point selection, focus aid is provided for the three AF points. During manual AF point selection, focus aid is provided for the selected AF point.
* An focus confirmation light is provided. No focus confirmation beeper.

8-4 AF point display: The selected AF point is indicated by: (1) Superimposed display in the viewfinder, (2) Current selected AF point indicated on the LCD panel.

8-5 AF point selection method: (1) Automatic selection or (2) Manual selection

8-6 AF point switching: P, Tv, Av, M: Manual and automatic AF point selection enabled.
Other shooting modes: Automatic AF point selection is set automatically.

8-7 AF point selection: Selectable with the Main Dial or Quick Control Dial.

(1) Automatic AF point selection

- In the One-Shot AF mode: Based on the subject information obtained by the three AF points, the AF point focusing the optimum (closest) subject is selected automatically.
- In the AI Servo AF mode: At the start of focusing, one of the three AF points must focus the subject. That AF point then will continue to focus-track the subject. If the subject moves away from the AF point, focusing is attempted again by all three AF points. (The focus-tracking cannot jump to another AF point.)
- In the AI FOCUS AF/ONE-SHOT AF mode: Based on the subject information obtained by the three AF

points, the AF point focusing the optimum subject is selected automatically. If a moving subject is detected, all three AF points are used to focus. When one of the AF points detect a moving subject, it switches to AI SERVO AF. Then the AF point tracking the subject focuses the subject. If the tracked subject moves away from the AF point, focusing is attempted again by all three AF points. (The focus-tracking cannot jump to another AF point.)

(2) Manual AF point selection
One or three AF points can be selected for focusing.

8-8 AF activation: AF is activated by pressing the shutter button halfway (SW-1)

8-9 AF operation speed: Same as EOS D30

8-10 Focus confirmation indication: Superimposed AF point displayed in viewfinder and focus confirmation beeper

* The focus confirmation beeper can be enabled or disabled in all the shooting modes.
* With automatic AF point selection and the ONE-SHOT AF mode, the active AF point lights in red.
* With automatic AF point selection and the AI SERVO AF mode, there is no superimposed AF point displayed.

8-11 AF precision: Same as the EOS 650's

8-12 AF working range: EV 0.5-18 (at normal temperature and ISO 100, with the standard chart)

8-13 AF-assist beam: (1) Beam emission: Lamp
Effective range: Approx. 3.8 m (at center), beam coverage: 28mm (135 equivalent) lens angle covered

(2) Conditions for emission: Emitted automatically under low light (EV 4 or lower at ISO 100)

* Emitted in shooting modes except Landscape and Sports.
* Emission can be disabled with C.Fn-5 (including external Speedlite).

(3) Emissions: 6 times in three bursts

* Emission stops when focus is achieved.

(4) Light source: Halogen krypton lamp

(5) With EX-, EZ-, and E-series Speedlites

- With 550EX, 540EZ, and ST-E2: The external Speedlite's AF-assist light will be emitted regardless of AF point selection mode (automatic or manual).
- With other EOS-dedicated Speedlites: When the center AF point has been selected, the external Speedlite's AF-assist light will be emitted. If a peripheral AF point is selected, the camera's AF-assist light will be emitted.

9. Exposure Control

9-1 Type: TTL full aperture metering with 35-zone SPC. Three metering modes provided:
1) Evaluative metering
2) Partial metering at center (approx. 9.5% of viewfinder)
3) Centerweighted average metering
* In Full Auto and Programmed Image Control modes: 1) is set automatically.
(2) and 3) cannot be set.)
* In the Creative Zone modes, 1), 2), or 3) can be set.

9-2 Shooting modes: The following AE modes and manual can be set:
1) Intelligent Program AE (shiftable)
2) Shutter-priority AE (No safety shift)
3) Aperture-priority AE (No safety shift)
4) Depth-of-field AE (A-DEP, shiftable)
5) Full Auto (Intelligent Program AE/non-shiftable)
6) Programmed Image Control modes (5)
Portrait, Landscape, Close-up, Sports, Night Scene
7) Manual
8) E-TTL autoflash program AE
High-speed flash (FP flash), FE lock
* No A-TTL/TTL autoflash program AE

9-3 Metering range: EV 2-20 (at normal temperature with 50mm f/1.4 lens at ISO 100)

9-4 Exposure beyond range warning: LCD digital display blinks at 2 Hz on the LCD panel and in the viewfinder.

9-5 Exposure metering: Activated when shutter button is pressed halfway (SW-1 ON)
* Metering remains active for 4 sec. after the halfway-depressed shutter button is let go.

9-6 ISO Speeds: The following ISO speeds are selectable with the on-screen menu:
1) 100 (Default), 2) 200, 3) 400, 4) 800, 5) 1000

9-7 Exposure Compensation: (1) AEB (Auto Exposure Bracketing)
1) Compatible shooting modes: See the table below (at 4)) for the shooting modes which enable AEB with the on-screen menu.
* During AEB: The AEB icon on the LCD panel blinks, and the *mark and AEB level blinks in the viewfinder.
2) Bracketing range: Up to +/- 2 stops in 1/2- or 1/3-stop increments
3) Bracketing sequence: Standard exposure, decreased exposure, and increased exposure
* Taken in accordance with the drive mode (single or continuous).

* If the self-timer is used, the three bracketed shots will be exposed successively after the 10-sec. self-timer delay.
* With C.Fn-7, the bracketing sequence can be changed or AEB can be set to continue even after the three bracketed shots are taken.

4) Bracketing factor: See the bracketing factor used for the respective shooting mode below.

Shooting Mode	Shutter Speed	Aperture
Program AE	●	●
Shutter-priority AE	—	●
Aperture-priority AE	●	—
Depth-of-field AE	●	—
Manual	●	—

5) AEB cancellation: Set the AEB amount to 0.
6) AEB automatic cancellation: Canceled by any of the following operations: Main switch off, lens changed, flash ready, battery replaced, or CF card replaced.

* AEB cannot be set in the Full Auto and Programmed Image Control modes.

(2) Manual exposure compensation

1) Compatible shooting modes: See the table below for the shooting modes which enable manual exposure compensation.
2) Bracketing range: Up to +/- 2 stops in 1/2- or 1/3-stop increments
3) Bracketing factor: See the bracketing factor used for the respective shooting mode below.

Shooting Mode	Shutter Speed	Aperture
Program AE	●	●
Shutter-priority AE	—	●
Aperture-priority AE	●	—
Depth-of-field AE	●	—

4) Exposure compensation cancellation: Set the exposure compensation amount to 0.
* Exposure compensation cannot be set in the Full Auto and Programmed Image Control modes.
* If both AEB and manual exposure compensation are set, the AEB amount will be shifted by the exposure compensation amount.

(3) Flash exposure compensation

1) Compatible flash: Built-in flash and EX-series Speedlites
2) Method: Flash exposure compensation button
3) Exposure compensation: Up to +/- 2 stops in 1/2- or 1/3-stop increments

4) Flash exposure compensation cancellation: Set the flash exposure compensation amount to 0.
* If flash exposure compensation has been set with the external Speedlite, the external Speedlite's flash exposure compensation will override the camera's flash exposure compensation setting.
* Flash exposure compensation cannot be set in the Full Auto and Programmed Image Control modes.
* The flash exposure compensation icon in the viewfinder lights.

9-8 AE Lock: (1) Auto AE lock
* In the One-Shot AF mode with evaluative metering, AE lock takes effect when focus is achieved.

(2) AE lock button
* Sets AE lock at any time.
* AE lock button does not work in the Full Auto and Programmed Image Control modes.
* Regardless of the metering mode, center partial metering will be used.
* During AE lock, pressing the AE lock button again renews the AE lock.
* When the built-in flash or an external Speedlite is used, the AE lock button works as an FE lock button.

9-9 Multiple exposures: Not possible

10. Shutter

10-1 Type: Vertical-travel, mechanical, focal-plane shutter with all speeds electronically-controlled
* Mechanical shutter: Both curtains have dedicated magnet control. (Curtain speed: 2.9 ms/15.0mm)

10-2 Shutter speeds: 1/4000 to 30 sec. (1/3- and 1/2-stop increments), bulb, X-sync at 1/200 sec.
* For bulb exposures, the elapsed exposure time is displayed on the LCD panel.

10-3 Shutter release: Soft-touch electromagnetic release (No cable-release socket)

10-4 Shutter-release time lag: Stop-down by up to 4.5 stops from maximum aperture and excluding AF operation time:
(1) During SW-1 ON, time lag between SW-2 ON and start of exposure: 100 ms
(2) Time lag between simultaneous SW-1/SW-2 ON and start of exposure: 240 ms

10-5 Long exposure noise reduction: None

10-6 Self-timer: Electronically-controlled 10-sec. delay
* Operates in all shooting modes.

* After starting, the self-timer is cancelable by pressing the drive button, turning the mode dial, pressing the flash button, or changing the lens.
* After focus is achieved, self-timer starts when the shutter button is pressed fully (SW-2). (In the AI SERVO AF/MF mode, self-timer starts immediately at SW-2.)
* With C.Fn-3-1, the self-timer delay can be set to 2 sec. instead.

10-7 Self-timer indicator: Red-eye reduction lamp (blinks at 2 Hz for the first 8 sec., then lights for the remaining 2 sec.)
LCD panel (Frame counter counts down from 10 to 1 sec.)
Beeper (beeps at 2 Hz for the first 8 sec., then beeps at 8 Hz for the remaining 2 sec.)
* The beeper sounds only if it has been enabled with the on-screen menu.

10-8 Camera shake warning: Provided in Full Auto and Programmed Image Control modes.
* If the shutter speed (Tv-auto) is 0 to 0.5 stops slower than the reciprocal of the lens focal length ×1.25, the shutter speed display blinks at 2 Hz.

11. Drive

11-1 Drive modes: (1) Single frame (2) Continuous (3) Self-timer (10 sec.)
* Creative Zone modes: Settable with the drive mode button.
* Full Auto and Programmed Image Control modes: Single frame or continuous set automatically depending on the shooting mode.

11-2 Continuous shooting: Continuous shooting with images recorded in the built-in buffer memory.
* When the buffer memory becomes full, further shooting is disabled until one image is completely transferred to the Compact Flash card.
* While no pictures are taken (SW-1 OFF), images stored in the buffer memory are constantly transferred to the Compact Flash card to free up the buffer memory.

11-3 Continuous shooting speed: Approx. 3 fps (at 1/250 sec. or faster shutter speeds)

11-4 Maximum burst during continuous shooting: 8 shots

11-5 Battery life: With Battery Pack BP-511 (Approx. shots)

Battery	Temperature	Shooting Conditions	
		AE 100%, FA 0%	AE 50%, FA 50%
EOS D60	At 20℃	620	490
	At 0℃	480	400
BG-ED3 (BP-511×2)	At 20℃	1240	980
	At 0℃	960	800

* Applicable conditions: Fully charged battery pack, EF 50mm f/1.4 USM, image review ON, image review time of 2 sec., and Large/Fine

11-6 Image review: Settable to OFF, ON, or ON (Info).
11-7 Image review time: Settable to 2, 4, or 8 sec. or Hold.

12. Built-in Flash

12-1 Type: Auto pop-up, retractable, built-in flash in the pentaprism with serial control, E-TTL autoflash

12-2 Guide No.: Guide No. 12 (at ISO 100 in meters)

12-3 Recycling time: Approx. 3 sec.

12-4 Flash ready indicator: Flash-ready icon lights on in viewfinder
* When the flash is not ready, the flash-ready icon is off and the shutter release is locked.

12-5 Flash coverage: Up to 18mm lens angle (equivalent to 28mm in 135 format)

12-6 Flash button: Provided
* For pop-up only. Manual retraction.
* Works only in Creative Zone modes.
* In the Full Auto and Programmed Image Control modes, it pops up automatically when flash is required.

12-7 Firing conditions: (1) In P, Tv, Av, A-DEP, M modes:
Press the flash button to pop-up and fire the flash for all shots.
(2) In Full Auto, Portrait, Close-up, and Night Scene modes:
Pops up and fires automatically in low light or backlit conditions.

12-8 Flash sync speed: Max. X-sync speed 1/200 sec.
1) In Full Auto, Program AE, A-DEP, Portrait, and Close-up modes: Set automatically to 1/200 sec. to 1/60 sec.
2) In the Night Scene mode: Set automatically to 1/200 sec. to 2 sec. (in 1/2-and 1/3-stop increments)
3) In Tv and M modes: Set manually to 1/200 sec. or slower.
4) In Av mode: Set automatically to 1/200 sec. to 30 sec. depending on the aperture setting.

12-9 Flash aperture: The flash aperture is set as shown below.

Shooting Mode	Av-Set	Av-Auto		Remarks
		E-TTL P	Tv-AE	
①Program AE		●		
②Shutter-priority AE			●	
③Aperture-priority AE	●			
④Depth-of-field AE		●		The result is the same as ①
⑤Full Auto		●		
⑥Portrait		●		
⑦Close-up		●		PL restriction aperture.
⑧Night Portrait		●		f/2.8 restriction for max. aperture.
⑨Manual	●			

* In the Landscape and Sports modes, the built-in flash will not fire. Only an external Speedlite can be fired (same result as ①).

12-10 Flash metering system: E-TTL autoflash (preflash metering and linked to AF points)

12-11 Flash level control: Automatic flash output reduction when backlit or daylight conditions are detected.

12-12 Flash exposure compensation: Up to +/-2 stops in 1/3- or 1/2-stop increments.
* Flash exposure compensation can be set with the camera for built-in and external Speedlite.

12-13 Effective flash range:

ISO	EF 24-85mm f/3.5-4.5 USM	
	Wide: 24mm f/3.5	Tele: 85mm f/4.5
100	1-3.4 m	1-2.6 m
200	1-4.8 m	1-3.7 m
400	1-6.8 m	1-5.3 m
800	1-9.6 m	1-7.5 m
1000	1-10.8 m	1-8.4 m

* If the focusing distance is shorter than 1 meter / 3.3 ft, the flash coverage will be partially obstructed by the lens.
* The maximum range is calculated by dividing the respective ISO speed's nominal Guide No. by the f/number.

12-14 Flash exposure beyond range warning: During FE lock, the flash icon blinks for 2 Hz.

12-15 Flash confirmation indicator: None

12-16 Flash-sync timing: 1st-curtain sync
* With C.Fn-8, 2nd-curtain sync is possible.

12-17 Flash duration: 1 ms or shorter

12-18 Color temperature: Equivalent to daylight

12-19 Optical axis offset: Flash center to lens axis: 73.8 mm

12-20 Power source: Supplied by camera's power source.

12-21 Red-eye reduction: With the built-in flash, the flash is fired after the red-eye reduction lamp lights.

1) Type: Illumination by lamp (lamp also used for AF-assist light)
2) Shooting modes: Operates in all modes except Landscape and Sports.
3) Operation setting: On-screen menu
4) Conditions for illumination: Lights after focus is achieved when the shutter button is pressed halfway (SW-1) in the One-Shot AF or MF mode. (In the AI SERVO AF mode, shutter-release priority takes effect and red-eye reduction lamp lights immediately at SW-1.)
5) Illumination duration: Under the conditions of 4, lamp lights during SW-1 (with the self-timer, it lights 2 sec. before shutter release). Light level decreases after 1.5 sec.
6) Lamp ON indicator: Exposure level display in viewfinder (dot display sequence for the first 1.5 sec.)
7) Shutter-release lock: None (Shutter-release priority)
* The control condition above also apply when an external Speedlite is used.

13. External Speedlite

13-1 Flash sync contacts: (1) Hot shoe: X-sync contacts
* Locking pin hole provided to prevent Speedlite slippage.
(2) Lower side terminal: PC terminal (JIS B-type socket)
* Screw lock and shock protection feature provided on the hot shoe.

13-2 Flash auto: Enabled with the camera's Program AE mode.
(1) With EX-series Speedlites: E-TTL autoflash
1) Normal flash
When the flash is ready, the flash sync speed (1/60 sec. - 1/200 sec.) is set automatically. The camera's E-TTL program automatically sets the flash aperture. When the shutter button is pressed fully (SW-2), a fixed-output preflash is fired right before the mirror goes up. The AE sensor takes an available light reading (before the preflash is fired) and a reflected-light reading when the preflash is fired. The suitable output of the main flash is then calculated, and the main flash is fired. If an EX-series Speedlite is set for high-speed sync (FP flash) and the light level exceeds the lens' minimum aperture, high-speed sync takes effect automatically. When highspeed sync is set, the ϟH icon lights in the viewfinder. Daylight sync (fill flash) can also be controlled automatically.
2) FE lock
When an EX-series Speedlite is used and the flash is

ready, the AE lock button functions as an FE lock button. Pressing this button fires a preflash and the AE sensor meters (by partial metering) the light reflected off the main subject. The suitable flash output is then calculated and stored in memory. When the shutter button is pressed fully, the flash is fired at the output stored in memory. If an EX-series Speedlite is set for high-speed sync (FP flash) and the light level exceeds the lens' minimum aperture, high-speed sync takes effect automatically. When high-speed sync is set, the ϟH icon lights in the viewfinder. After the FE lock button is pressed and the flash is ready, a preflash is fired and FE lock takes effect. If the flash will be beyond the range (the flash output is 0.5 or more stops insufficient for obtaining a proper flash exposure) the ϟ icon blinks at 2 Hz. Daylight sync (fill flash) can also be controlled automatically.

* With the 550EX, MR-14EX, MT-24EX: Enables 3-group (A, B, C) wireless control, flash ratio control (A:B), FEB, and modeling flash (with flash ratio).

(2) With built-in flash: E-TTL autoflash

Specifications are the same as (1) above, except high-speed sync is not possible.

(3) With EZ-, E-, EG-, ML-, and TL-series Speedlites: Autoflash not possible.

1) With the 540EZ, 430EZ, and 420EZ:
Compatible only in the manual (Multi) mode (A-TTL/TTL autoflash modes will not work.).

- Set the camera to the manual (M) mode (recommended).
- Set sync speed manually to 1/200 sec. or slower.
- Set the flash aperture manually to suit the subject distance and brightness.

* Since the 300EZ does not have a manual flash mode, it will be the same as 2) in (3).

2) With other EOS Speedlites:
Incompatible since they do not have a manual flash mode. (Flash cannot be fired.)

* The 480EG can be fired by using the sync contacts.

(4) With other Speedlites:

1) With M-, T-, A-series Speedlites
Compatible in the manual flash mode or with external flash metering.

- Set the camera to the manual (M) mode (recommended).
- Set sync speed manually to 1/200 sec. or slower.
- Set the flash aperture manually to suit the subject distance and brightness.

2) With non-Canon flash units:
On-camera unit can synchronize at 1/200 sec. or slower.
Studio flash can synchronize at 1/60 sec. or slower (testing recommended).

13-3 Wireless flash: Enabled with the 550EX, 420EX, MR-14EX, MT-24EX, or ST-E2.
* Three-group (A, B, C) slave control, a flash ratio (A:B) setting, FEB, and modeling flash (with flash ratio) are enabled.
* The 420EX can function as a slave, while the MR-14EX or MT-24EX serves as the master unit.

13-4 Flash exposure compensation: Settable with the camera or external Speedlite.
* Up to +/-2 stops in 1/3- or 1/2-stop increments.
* If flash exposure compensation is set with both the camera and Speedlite, the Speedlite's setting will override the camera's setting.

13-5 Flash Exposure Bracketing (FEB): Settable with the 550EX, MR-14EX, or MT-24EX.
* Not settable with the camera.
* When the flash fails to recycle fast enough during continuous shooting with FEB, the shutter release locks. After the shutter button is released from the fully depressed position, AE metering takes effect before the flash is ready.

13-6 Modeling flash: With the 550EX, 420EX, MR-14EX, or MT-24EX, press the depth-of-field preview button (fires at 70 Hz for 1 sec.).

14. LCD Monitor

14-1 Type: TFT color, liquid-crystal monitor
14-2 Monitor size: 1.8 in.
14-3 Pixels: Approx. 114,000 pixels
14-4 Coverage: Approx. 100% (with effective pixels)
14-5 Brightness adjustment: 2-level (standard/brighter) adjustment provided.
14-6 Refresh rate: Approx. 1/60 sec.
14-7 Angle adjustment: None
14-8 Protective cover: None

15. Playback

15-1 Image display format: (1) Single image, (2) Single image (Info.), (3) 9-image index (4) Magnified, (5) Auto play
15-2 Display conditions: Images saved in DCF system.
* If the image is not in the DCF system, [?] is displayed on the LCD monitor.
Also applicable to thumbnail images (index display).
15-3 Highlight alert: In the single image (Info.) display mode, the highlight portions which do not contain image information will blink.

16. Information display

16-1 Display format: (1) Standby mode
1) Auto power-off setting time, 2)Image review,
3) Image review time, 4) Processing parameters (when set),
5) Custom Function setting No.,
6) Flash exposure compensation amount, 7) AEB increments,
8) Shots remaining, 9) CF card space remaining, 10) ISO speed
(2) Playback/Single (INFO.)
1) File No., 2) Shooting mode, 3) Shutter speed, 4) Aperture,
5) Exposure compensation amount,
6) Flash exposure compensation amount (only when flash is used),
7) White balance, 8) Metering mode, 9) ISO speed,
10) Image No./Total images captured,
11) Image erase protection (when set),
12) File size/Compression rate, 13) Date, 14) Time, 15) Histogram
* If an image not in the DCF system is selected, [?] is displayed on the LCD monitor.
* If an image that cannot be displayed is selected, [!] is displayed on the LCD monitor.
* Information display does not work in the index display mode and magnified display mode.

17. Protection/Deletion of Recorded Images

17-1 Protection: A single image can be protected or unprotected.
17-2 Erase: A single image or all images stored in a Compact Flash card can be erased if they are unprotected.
* Protected images cannot be erased with the camera.

18. Menus

18-1 Description: 24 menus (8 shooting menus, 4 playback menus, 12 setup menus)
* See the list of menu items on page 33.
18-2 LCD monitor display language: Japanese, English, French, or German can be selected.
18-3 Firmware updating: Updating by the user is not possible.
18-4 Print setting feature (DPOF): For Version 1.1

19. Sound recording: Not provided

20. Customization

20-1 Custom Functions: 14 Custom Functions with 38 settings settable with the camera.
* See the list of Custom Functions on page 34.
20-2 Personal Functions: None

21. External Interface

21-1 Digital terminal: USB Ver. 1.1
21-2 Video output terminal: NTSC/PAL

21-3 Remote control terminal: N3-type terminal

22. Power Source

22-1 Battery: One Battery Pack BP-511 (lithium ion rechargeable battery)
* With Battery Grip BG-ED3, two BP-511 packs can be used.

22-2 Main switch: OFF turns off the power.

22-3 Battery check: Automatic battery check when the main switch is turned on. The battery level is indicated by one of three levels on the LCD panel.

22-4 Power-saving feature: With the menu, settable to 1, 2, 4, 8, 15, or 30 min.
(Auto power off) Power turns off automatically after the set time of non-operation elapses.

22-5 Back-up battery: One CR2025 lithium battery

22-6 Backup battery warning: 7-segment, 4-digit display on LCD panel
* During backup battery replacement, the backup function is maintained if the attached battery pack has power.

22-7 Backup function: Menu settings (including the current date and time) are maintained.

23. Body (Chassis) Material:
Stainless steel and polycarbonate with glass fiber

24. Exterior

24-1 Exterior material: Polycarbonate resin

24-2 Exterior color: Black paint finish and dark blue grain leather

24-3 Tripod socket: CU 1/4

24-4 Interchangeable grip: None

24-5 LCD panel illumination: Provided (Bluish-green, When it is turned on with the on-screen menu, the illumination turns on when you press the SET button.)

25. Dimensions: 149.5 (W)×106.5 (H)×75 (D) mm
5.9 (W)×4.2 (H)×3.0 (D) in.

26. Weight: 780 g/27.5 oz.
(Excluding the Battery Pack, Compact Flash card and back-up battery.)

27. Operating Environment

27-1 Guaranteed temperature range: 0°C to 40°C

27-2 Operating humidity range: 85% or less

28. Major Accessories:

(1) Battery Pack BP-511
(2) Compact Power Adapter CA-PS400
(3) DC Coupler DR-400
(4) Interface Cable IFC-200PCU
(5) Video Cable VC-100
(6) Battery Grip BG-ED3
(7) Dedicated strap
* Also see page 39 for system accessories.

4. NOMENCLATURE

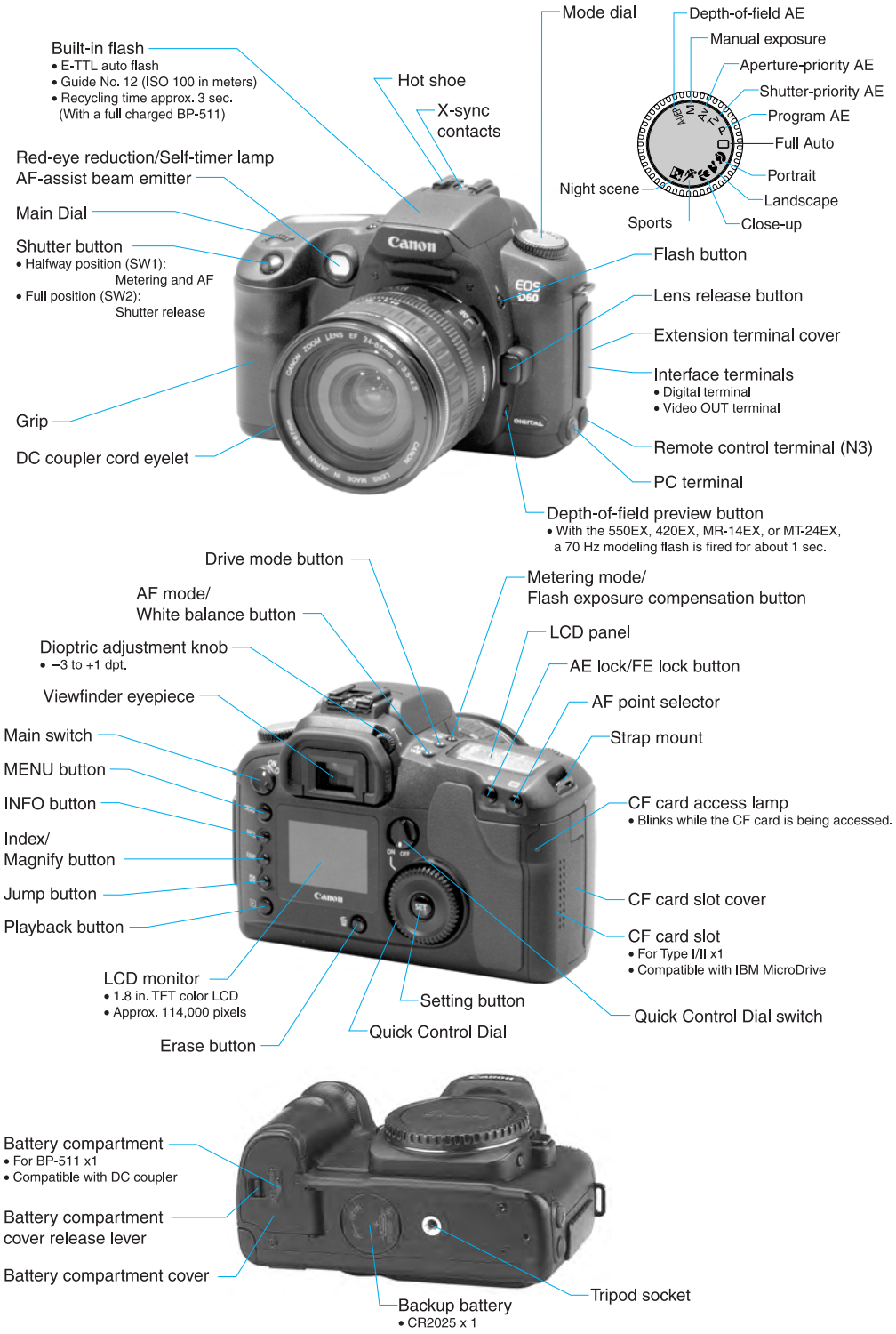


Fig. 1-3 Nomenclature and camera controls.

5. VISUAL INDICATORS

5.1 Viewfinder Information

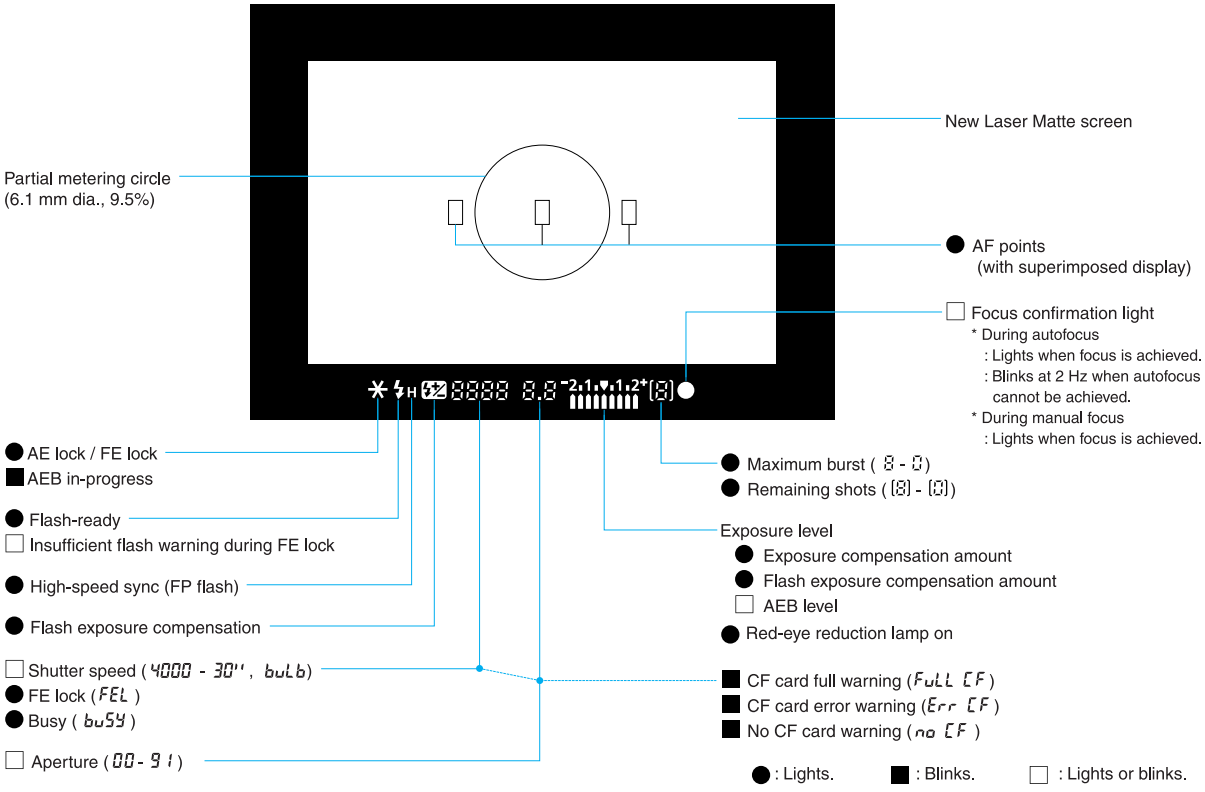


Fig. 1-4 Viewfinder Information

5.2 LCD Panel Information

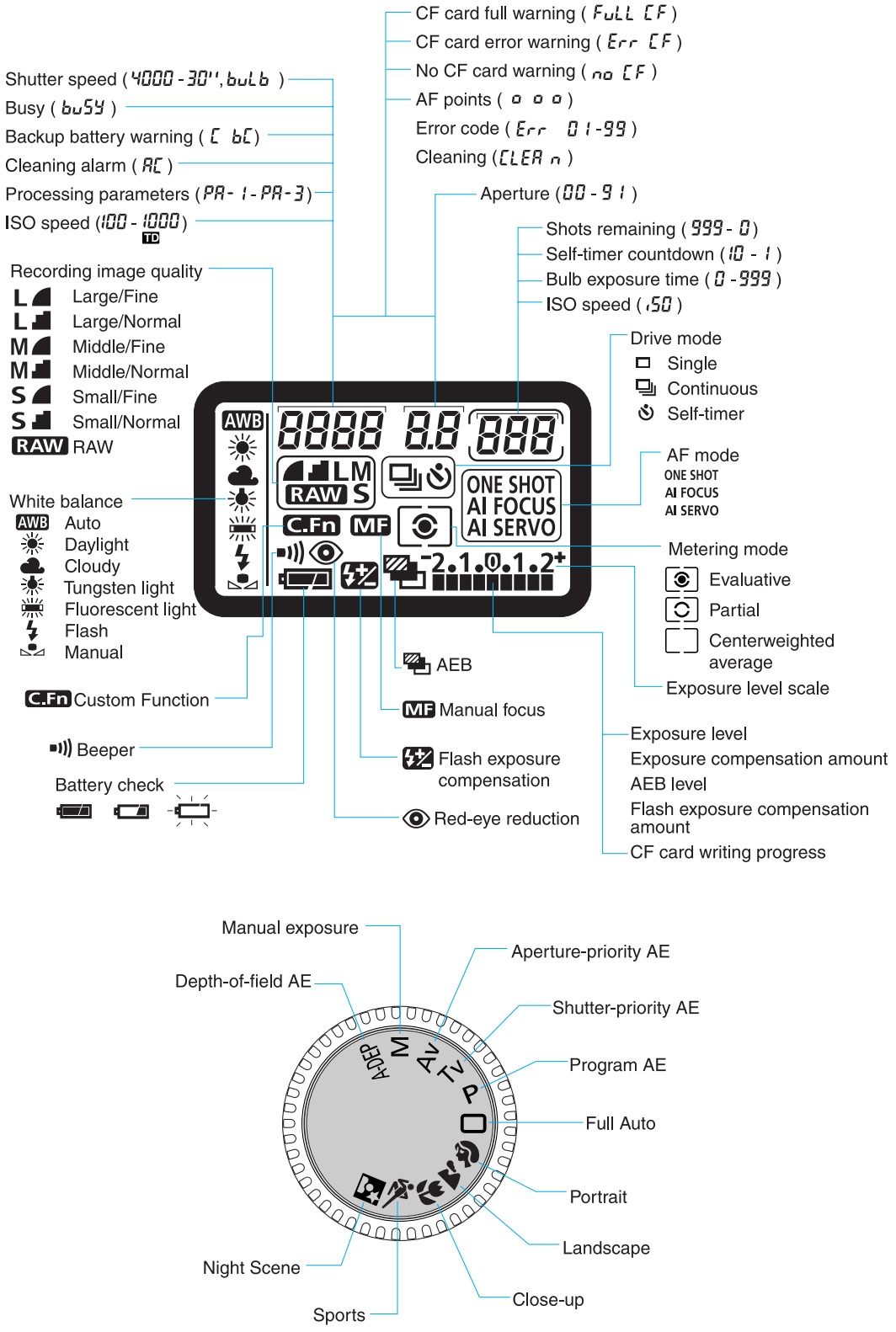


Fig. 1-5 LCD Panel Information

5.3 LCD Monitor Display

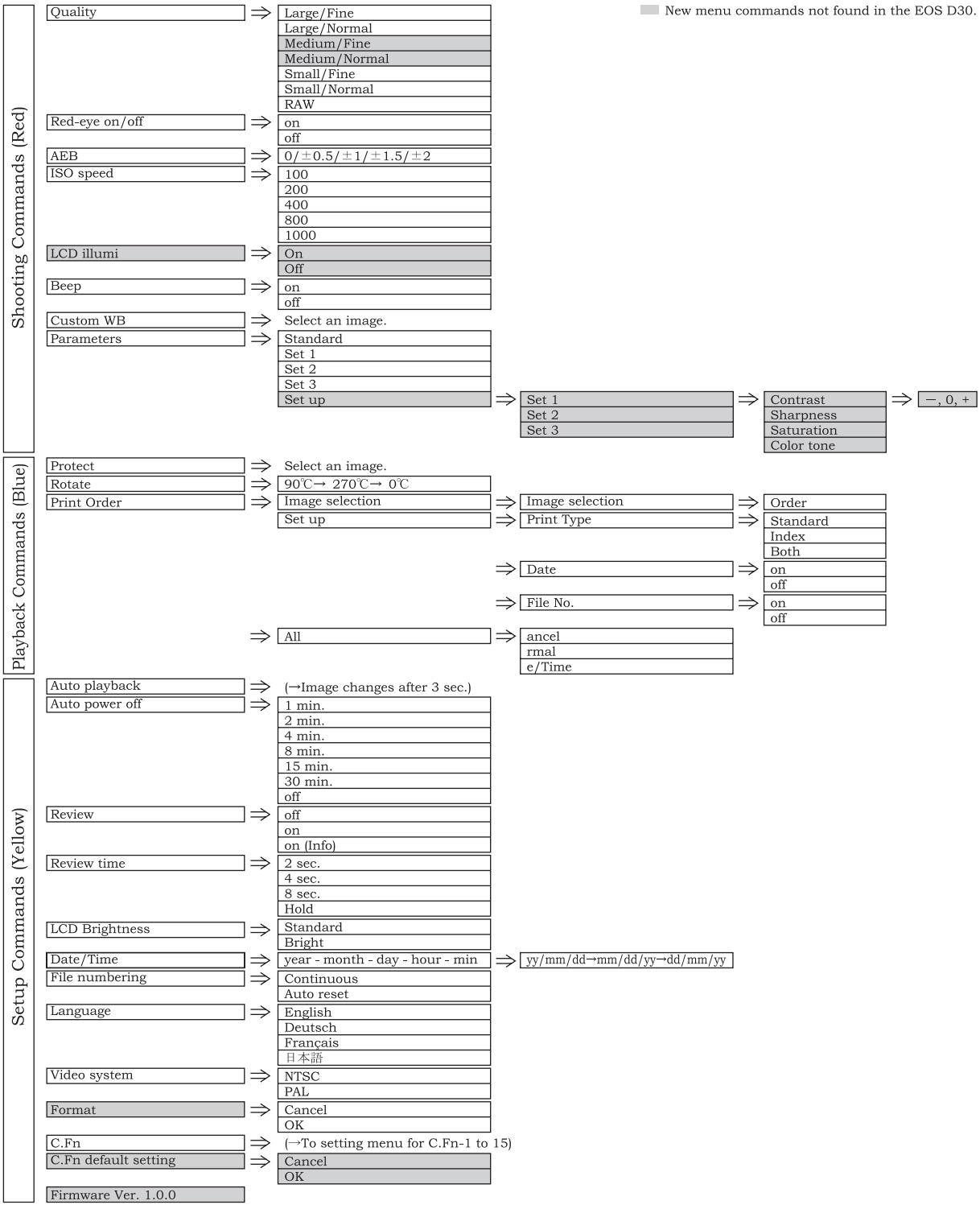


Fig. 1-6 Menu Commands

6. CUSTOM FUNCTION

C.Fn No.	Custom Function	Setting	Description	Remarks
C.Fn-01	Unused			
C.Fn-02	Shutter button/AE lock button	0	AF/AE lock	This changes the function of the shutter button and AE lock button.
		1	AE lock/AF	
		2	AF/AF lock	
		3	AE+release/AE+AF	
C.Fn-03	Mirror lockup	0	Disable	1: During close-ups and with super telephoto lenses, this setting prevents camera shake caused by the mirror.
		1	Enable	
C.Fn-04	Tv/Av and exposure level	0	1/2stop	1: Effective when a finer exposure setting is required.
		1	1/3stop	
C.Fn-05	AF-assist beam/Flash firing	0	Emits/Fires	Convenient in situations when the AF-assist light and flash firing are not desirable.
		1	Does not emit/Fires	
		2	Only ext. flash emits/Fires	
		3	Emits/Does not fire	
C.Fn-06	Shutter speed in Av mode	0	Auto	1: Effective in dark conditions with flash, giving priority to the subject's exposure.
		1	1/200 (fixed)	
C.Fn-07	AEB sequence/auto cancellation	0	0→−→ +/Enable	1 and 3: Convenient when you want to repeat AEB shooting.
		1	0→−→+/Disable	
		2	−→0→ +/Enable	
		3	−→0→ +/ Disable	
C.Fn-08	Shutter curtain sync	0	1st-curtain sync	1: With slow-speed sync, you can capture the subject's light trail.
		1	2nd-curtain sync	
C.Fn-09	Lens AF stop button Fn. Switch	0	AF stop	This changes the AF stop button's function.
		1	AF start	
		2	AE lock while metering	
C.Fn-10	Auto reduction of fill flash	0	Enable	1: This prevents underexposure of a backlit subject.
		1	Disable	
C.Fn-11	Menu button return position	0	Top	The most frequently-used menu can be set to come up quickly.
		1	Previous(top if powered off)	
		2	Previous	
C.Fn-12	SET button func. when shooting	0	Default (no function)	By assigning a frequently-used function, you can use the function quickly.
		1	Change quality	
		2	Change ISO speed	
		3	Change parameters	
C.Fn-13	Sensor cleaning	0	Disable	1: For when you want to clean the sensor.
		1	Enable	
C.Fn-14	Superimposed display	0	On	1: Prevents the AF point from lighting up in red in the viewfinder.
		1	Off	
C.Fn-15	Shutter release w/o CF card	0	Possible without CF card	1: Prevents you from forgetting to insert a CF card in the camera.
		1	Not possible	

New menu commands not found in the EOS D30.

Fig. 1-7 Custom Functions

7. DIMENSIONS & PROGRAM DIAGRAMS

7.1 Dimensions

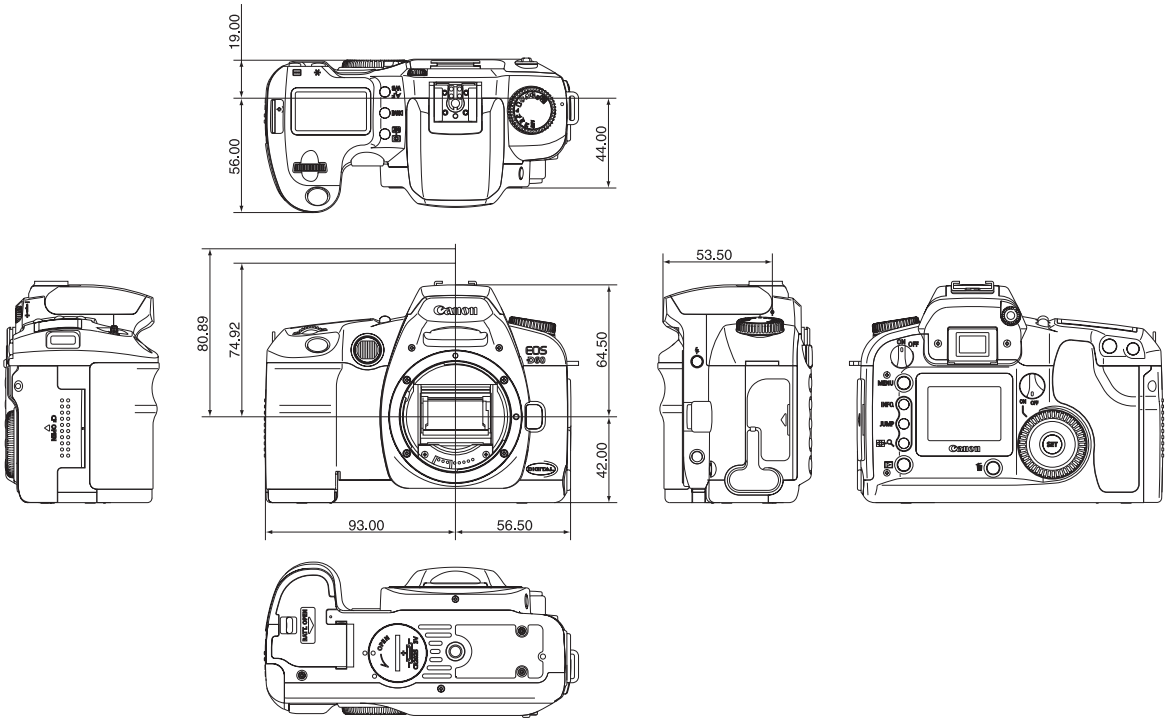


Fig. 1-8 Six Exterior Views

7.2 Program Diagrams

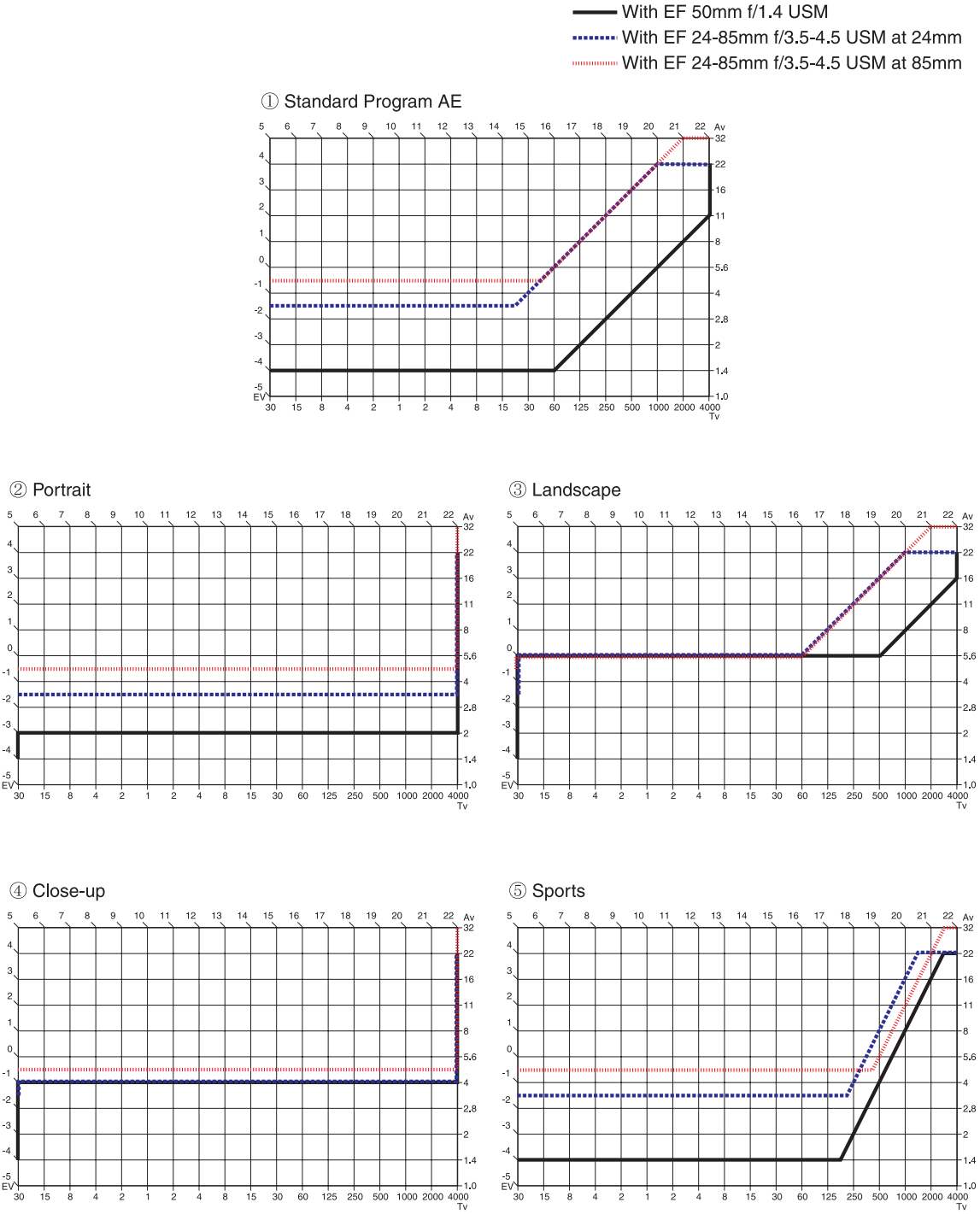
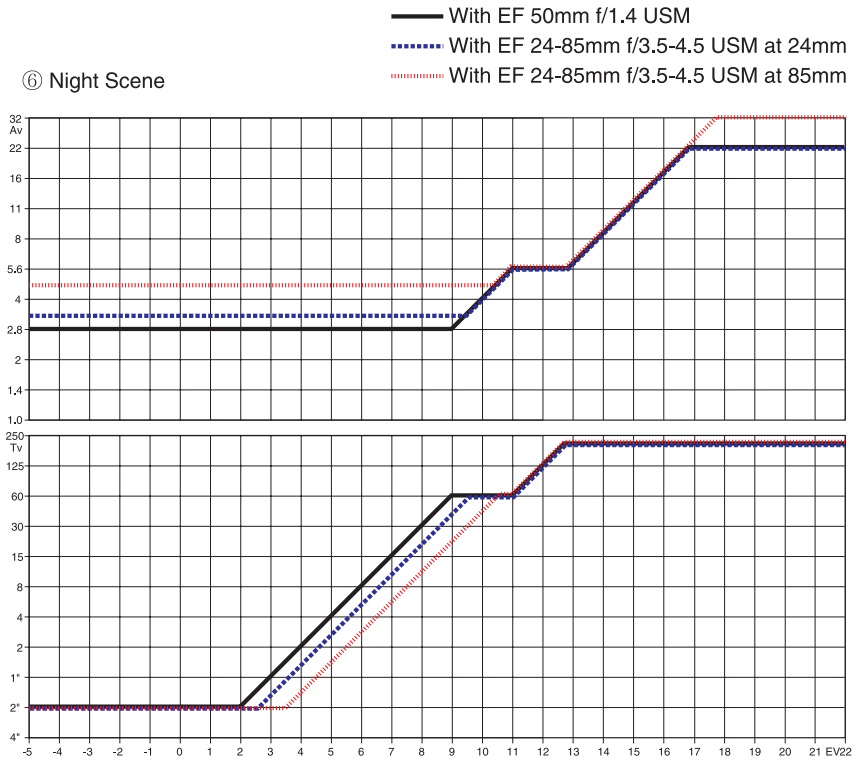


Fig. 1-9 AE Programs


With EF 50mm f/1.4 USM
With EF 24-85mm f/3.5-4.5 USM at 24mm
With EF 24-85mm f/3.5-4.5 USM at 85mm
⑥ Night Scene
Av
Tv
EV

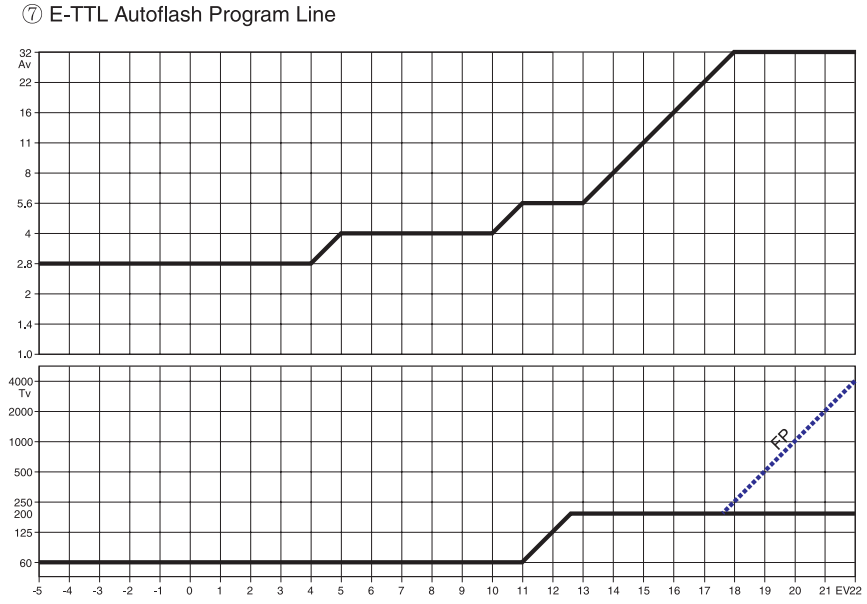

⑦ E-TTL Autoflash Program Line
Av
Tv
FP
EV

Fig. 1-10

8. SYSTEM ACCESSORIES COMBATIBILLITY TABLES

8.1 System Accessories

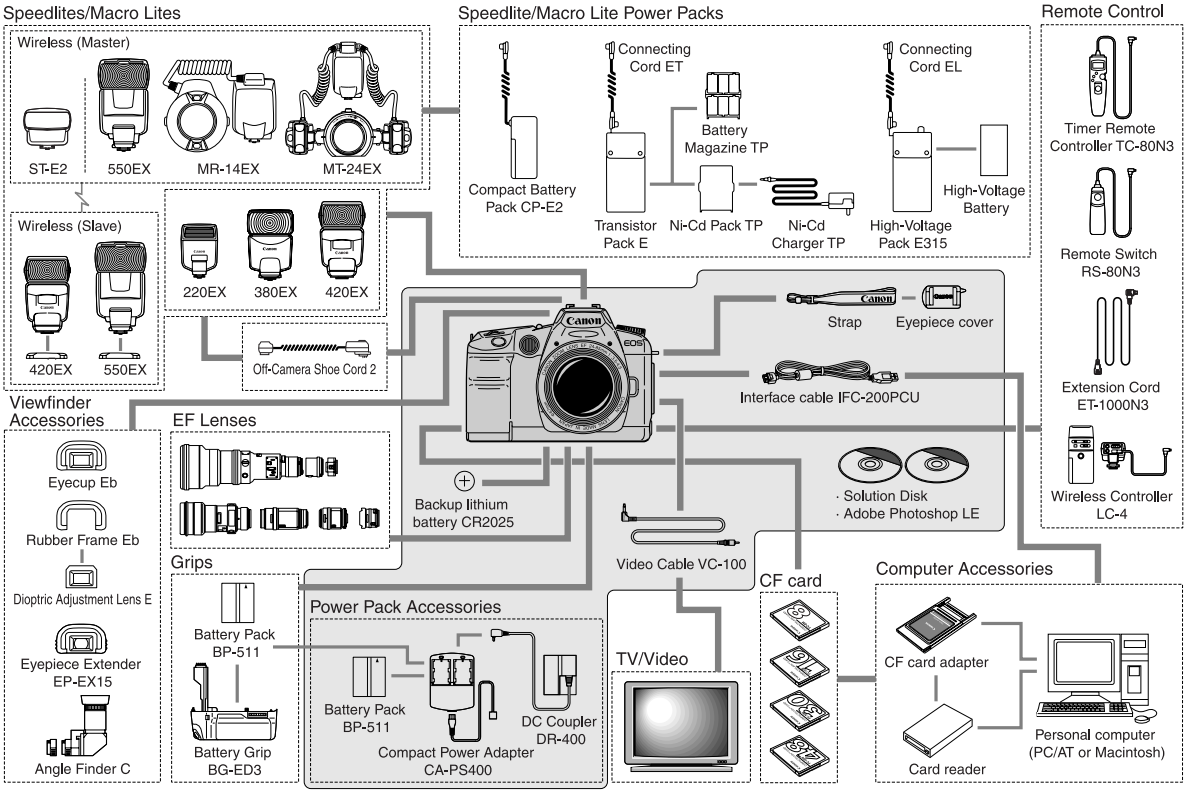


Fig. 1-11 System Accessories

8.2 EOS System Accessories

1. Interchangeable Lenses

◎ : Compatible.● : Compatible with restrictions.× : Not compatible.

No.	Item	Status	Note
001	EF14mm f/2.8 L	◎	
002	EF15mm f/2.8 FE	◎	
003	EF20mm f/2.8 USM	◎	
004	EF24mm f/1.4 L USM	◎	
005	EF24mm f/2.8	◎	
006	EF28mm f/1.8 USM	◎	
007	EF28mm f/2.8	◎	
008	EF35mm f/1.4 L USM	◎	
009	EF35mm f/2	◎	
010	EF50mm f/1.0 L USM	◎	
011	EF50mm f/1.4 USM	◎	
012	EF50mm f/1.8	◎	
013	EF50mm f/1.8 II	◎	
014	EF50mm f/2.5 MACRO	◎	
015	MP-E 65mm f/2.8 1-5×	◎	
016	EF85mm f/1.2 L USM	◎	
017	EF85mm f/1.8 USM	◎	
018	EF100mm f/2 USM	◎	
019	EF100mm f/2.8 MACRO USM	◎	
020	EF100mm f/2.8 MACRO	◎	
021	EF135mm f/2 L USM	◎	
022	EF135mm 2.8 SF	◎	
023	EF180mm f/3.5L MACRO USM	◎	
024	EF200mm f/1.8 L USM	◎	
025	EF200mm f/2.8 L USM	◎	
026	EF200mm f/2.8 L II USM	◎	
027	EF300mm f/2.8 L IS USM	◎	
028	EF300mm f/2.8 L USM	◎	
029	EF300mm f/2.8 L II USM	◎	
030	EF300mm f/2.8 L III USM	◎	
031	EF300mm f/4 L IS USM	◎	
032	EF300mm f/4 L USM	◎	
033	EF400mm f/2.8 L IS USM	◎	
034	EF400mm f/2.8 L USM	◎	
035	EF400mm f/2.8 L II USM	◎	
036	EF400mm f/4 DO IS USM	◎	
037	EF400mm f/5.6 L USM	◎	
038	EF500mm f/4 L IS USM	◎	
039	EF500mm f/4.5 L USM	◎	
040	EF500mm f/4.5 L II USM	◎	
041	EF600mm f/4 L IS USM	◎	
042	EF600mm f/4 L USM	◎	
043	EF600mm f/4 L II USM	◎	
044	EF1200mm f/5.6 USM	◎	
045	EF17-35mm f/2.8 L USM	◎	
046	EF20-35mm f/2.8 L	◎	
047	EF20-35mm f/3.5-4.5 USM	◎	
048	EF22-55mm f/4-5.6 USM	◎	
049	EF24-85mm f/3.5-4.5 USM	◎	
050	EF28-70mm f/2.8 L USM	◎	
051	EF28-70mm f/3.5-4.5	◎	
052	EF28-70mm f/3.5-4.5 II	◎	
053	EF28-80mm f/2.8-4 L USM	◎	
054	EF28-80mm f/3.5-5.6	◎	
055	EF28-80mm f/3.5-5.6 II	◎	
056	EF28-80mm f/3.5-5.6 USM	◎	
057	EF28-80mm f/3.5-5.6 II USM	◎	
058	EF28-80mm f/3.5-5.6 III USM	◎	
059	EF28-80mm f/3.5-5.6 IV USM	◎	
060	EF28-80mm f/3.5-5.6 V USM	◎	

No.	Item	Status	Note
061	EF28-90mm f/4-5.6	◎	
062	EF28-90mm f/4-5.6 USM	◎	
063	EF28-105mm f/3.5-4.5 USM	◎	
064	EF28-105mm f/3.5-4.5II USM	◎	
065	EF28-135mm f/3.5-5.6 IS USM	◎	
066	EF28-200mm f/3.5-5.6	◎	
067	EF28-200mm f/3.5-5.6 USM	◎	
068	EF35-70mm f/3.5-4.5	◎	
069	EF35-70mm f/3.5-4.5 A	◎	
070	EF35-80mm f/4-5.6 PZ	◎	
071	EF35-80mm f/4-5.6	◎	
072	EF35-80mm f/4-5.6 II	◎	
073	EF35-80mm f/4-5.6 III	◎	
074	EF35-80mm f/4-5.6 USM	◎	
075	EF35-105mm f/3.5-4.5	◎	
076	EF35-105mm f/4.5-5.6	◎	
077	EF35-105mm f/4.5-5.6 USM	◎	
078	EF35-135mm f/3.5-4.5	◎	
079	EF35-135mm f/4-5.6 USM	◎	
080	EF35-350mm f/3.5-5.6 L USM	◎	
081	EF38-76mm f/4.5-5.6	◎	
082	EF50-200mm f/3.5-4.5	◎	
083	EF50-200mm f/3.5-4.5 L	◎	
084	EF55-200mm f/4.5-5.6 USM	◎	
085	EF70-200mm f/2.8 L IS USM	◎	
086	EF70-200mm f/2.8 L USM	◎	
087	EF70-200mm f/4 L USM	◎	
088	EF70-210mm f/4	◎	
089	EF70-210mm f/3.5-4.5 USM	◎	
090	EF75-300mm f/4-5.6	◎	
091	EF75-300mm f/4-5.6 II	◎	
092	EF75-300mm f/4-5.6 III	◎	
093	EF75-300mm f/4-5.6 USM	◎	
094	EF75-300mm f/4-5.6 II USM	◎	
095	EF75-300mm f/4-5.6 III USM	◎	
096	EF75-300mm f/4-5.6 IS USM	◎	
097	EF80-200mm f/2.8 L USM	◎	
098	EF80-200mm f/4.5-5.6	◎	
099	EF80-200mm f/4.5-5.6 II	◎	
100	EF80-200mm f/4.5-5.6 USM	◎	
101	EF100-200mm f/4.5 A	◎	
102	EF100-300mm f/5.6	◎	
103	EF100-300mm f/5.6 L	◎	
104	EF100-300mm f/4.5-5.6 USM	◎	
105	EF100-400mm f/4.5-5.6 IS USM	◎	
106	TS-E24mm f/3.5 L	◎	
107	TS-E45mm f/2.8	◎	
108	TS-E90mm f/2.8	◎	
109	Extender EF 1.4×, 1.4× II	◎	
110	Extender EF 2×, 2× II	◎	
111	Extension Tube EF12	◎	
112	Extension Tube EF25	◎	
113	Life-size Converter E	◎	
114	Lens Mount Converter FD-EOS	●	*1
115	Macro Lens Mount Converter FD-EOS	●	*1
116	Close-up Lens 250D	◎	
117	Close-up Lens 500D	◎	
118	Close-up Lens 500	◎	

2. Speedlites

No.	Accessory	Status	Note
001	220EX	◎	
002	380EX	◎	
003	420EX	◎	
004	550EX	◎	
005	ST-E2	◎	
006	480EG	●	*2
007	540EZ	●	*2
008	430EZ	●	*2
009	420EZ	●	*2
010	300EZ	×	
011	200E	×	
012	MR-14EX	◎	
013	MT-24EX	◎	
014	ML-3	×	
015	Multi-Speedlite system (wired)	×	
016	Off-Camera Shoe Cord 2	◎	

3. EOS Camera Cases

No.	Accessory	Status	Note
001	EOS-1V/EOS-3 cases	×	
002	EOS Elan 7/Elan 7E/30case	×	
003	EOS A2/A2E/5 case	×	
004	EOS Elan II/Elan IIE/50/50E case	×	
005	EOS 300/Rebel 2000 case	×	
006	EOS-1N case	×	
007	EOS-1 case	×	
008	EOS 10S/10 case	×	
009	EOS 100/Elan cases	×	
010	EOS Rebel G/500 N/Rebel X/Rebel XS/500 cases	×	
011	EOS 650/620/630/600 cases	×	
012	EOS IX case	×	
013	EOS IX 7/IX Lite case	×	

4. Remote Control

No.	Accessory	Status	Note
001	Remote Switch 60T3	●	*3
002	Remote Switch RS-60E3	×	
003	Remote Switch RS-80N3	◎	
004	Timer Remote Controller TC-80N3	●	*4
005	Remote Controller RC-1	×	
006	Wireless Remote Controller LC-3	●	*3,5
007	Wireless Remote Controller LC-4	●	*5

5. Grips and Motor Drives

No.	Accessory	Status	Note
001	GR10	×	
002	GR20	×	
003	GR50	×	
004	GR60	×	
005	GR70	×	
006	VG10	×	
007	GR-100TP	×	
008	GR-80TP	×	
009	GR-E1	×	
010	PB-E1	×	
011	PB-E2	×	
012	BP-E1	×	
013	BP-5/B	×	
014	BP-50	×	
015	BP-200	×	
016	BP-300	×	
017	BP-8	×	
018	BG-ED3	◎	

6. Viewfinder Accessories

No.	Accessory	Status	Note
001	Eyecup E	×	
002	Eyecup Eb	◎	
003	Eyecup Ec	×	
004	Eyecup Ec-II	×	
005	Eyecup Ed	×	
006	Eyecup Ed-E	×	
007	Eyecup Ee	×	
008	Antifog Eyepiece Ec	×	
009	Antifog Eyepiece Ed	×	
010	Dioptric Adjustment Lens E	◎	
011	Dioptric Adjustment Lens Ed	×	
012	Dioptric Adjustment Lens Ee	×	
013	Rubber Frame Ec	×	
014	Rubber Frame Eb	◎	
015	Focusing Screen E	×	
016	Focusing Screen Ec	×	
017	Focusing Screen Ed	×	
018	Magnifier S	◎	
019	Angle Finder B	◎	
020	Angle Finder C	◎	
021	Angle Finder Adapter Ed	×	
022	Angle Finder Adapter EdII	×	
023	Eyepiece Extender EP-EX15	◎	

7. Databacks

No.	Accessory	Status	Note
001	Quartz Dateback E	×	
002	Quartz Dateback DB-E2	×	
003	Technical Back E	×	
004	Keyboard Unit TB	×	
005	Interface Unit TB	×	
006	Command Back E1	×	

8. Miscellaneous

No.	Accessory	Status	Note
001	Panorama Adapter PA-1000	×	
002	EOS LINK SOFTWARE ES-E1	×	

*1: Compatible only during manual exposure.
(Officially, it will be stated as incompatible because an exposure error will occur.)
*2: Compatible only during manual flash exposure.
(With the 480EG, external autoflash is also possible.)
*3: Compatible with the use of RA-N3.
*4: In the case of long exposures, add 2 sec. to the target exposure time.
*5: With the remote controlled-camera's main switch set to ON (1SR incompatible), use a shutter speed faster than 1 sec. and disable the auto power-off.

9. COMPARISON WITH OTHER MODELS

9.1 Comparison with Competing Models

Manufacturer		Canon	Nikon	Fuji Film	SIGMA
Specification		EOS D60	D100	FinePix S2 Pro	SD9
Imaging element	Imaging element/Imaging format	Single-plate CMOS/Direct imaging	Single plate CCD/Direct imaging	Single-plate Super CCD honeycomb /Direct imaging	FOVEON X3 CMOS/Direct imaging
	Pickel count (megapixels)	Total 652/Effective 630	Total 631/Effective 615	Effective 617	Total 354/Effective 343
	Effective sensor size (mm)	22.7×15.1	23.7×15.6	23.0×15.5	20.7×13.8
	Aspect ratio	2:3	3:2	2:3	3:2
	Color filter type	Primary color	Primary color	Primary color	***
	Low-pass filter	Built-in	***	***	***
Lens	Lens/Lens mount	EF lenses/EF mount	Nikkor lenses/F mount	Nikkor lenses/F mount	SIGMA SA lenses/SA mount
	35mm equivalent focal length	Approx. 1.6×	Approx. 1.5×	Approx. 1.5×	Approx. 1.7×
	Restrictions	None	Yes	Yes	***
Viewfinder	Interchangeable Focus. Screen	N/A	***	N/A	***
	Coverage	95%	95%	92%	97% vertically/98% horizontally
	Magnification (-1 dpt, 50mm lens at infinity)	0.88×	0.8	***	0.77
	Eyepoint	20	20	**	18
	Dioptric adjustment (dptr)	-3 - +1	-2 - + 1	-1.8 - +0.8	-3 - +1
	Depth-of-field preview	Yes	Yes	Yes	N/A
AF system	AF point	3	5	5	***
	Modes	3	3	3	3
Metering	System	TTL full aperture metering with 35-zone SPC	TTL full aperture with 3D 10- zone SPC	TTL full aperture metering with 10-zone SPC	***
	Modes	3	3	3	3
Exposure control	Shooting modes	11	4	4	4
	ISO speed range	100,200,400,800,1000	200,400,800,1600 (+push process mode)	100,160,200,400,800,1600	100,200,400
	Exp. comp.(Increments;Range)	1/3, 1/2 ; +/- 2 stops	1/3, 1/2; +/- 5F	1/2 ; +/- 3 stops	1/2; +/- 3F
	ISO bracket	N/A	Yes	N/A	N/A
Shutter	Type	Mechanical	***	Mechanical	Mechanical
	Speed range	1/4000 -30sec, bulb	1/4000 -30, bulb	1/4000 - 30sec, bulb	1/6000 - 30, bulb
	X-sync	1/200sec	1/180	1/125sec	1/180
Flash	Built-in flash Cno. (ISO 100,m)	12	11	12	—
	Control system	E-TTL	3D-MultiBL/MultiBL/D-TTL	TTL-BL	—
	Wireless multi speedlites	Yes	***	N/A	1/2; +/-3 stops
	Flash exp. comp.(Step; Range)	1/3, 1/2; 2 stops	Yes	***	—
White balance	Sensor	Imaging element	Imaging element	Imaging element	***
	Modes	7	8	8	8
	Manual WB	Yes	Yes	Yes	***
	WB bracket	N/A	Yes	N/A	N/A
Drive	Continuous shooting speed (fps)	3	***	2	***
	Max. burst	8	***	7	***
Image processing parameter		Yes	Yes	N/A	—
Noise reduction during log exposure		Yes	***	N/A	***
Image recording	Recording medium	CF (Compact Flash) card	CF (Compact Flash) card	Smart Media or CF card	CF (Compact Flash) Card
	Slot type/Qty	CF Type I, II/1 slot	CF TYPE I, II/1 slot	SM + CF Type II/2 slots	CF TYPE I, II/1 slot
	Compatible HD	Micro Drive	Micro Drive	Micro Drive	Micro Drive
	Recording format	①Large/Fine (JPEG) ②Large/Normal (JPEG) ③Middle/Fine (JPEG) ④Middle/Normal (JPEG) ⑤Small/Fine (JPEG) ⑥Small/Normal (JPEG) ⑦RAW (No compression)	①JPEG/Fine (JPEG, 1/4) ②JPEG/Normal (JPEG, 1/8) ③JPEG/Basic (JPEG, 1/16) ④RGB-TIFF (8bit) ⑤RAW (12bit)	①TIFF-RGB (8bit/No compression) ②TIFF-YC (8bit/No compression) ③JPEG/Fine (JPEG) ④JPEG/Normal (JPEG) ⑤RAW (12bit)	①RAW/HI (No compression) ②RAW/MED (No compression) ③RAW/LOW (No compression) ①R/H 2268×1512/**MB ②R/M 1134×756/**MB ③R/L 756×504/**MB
	File size (Approx.)	①3072×2048/2.5MB ②3072×2048/1.3MB ③2048×1360/1.4MB ④2048×1360/0.7MB ⑤1536×1024/0.9MB ⑥1536×1024/0.5MB ⑦3072×2048/7.4MB	①3008×2000/**MB ②2240×1488/**MB ③1504×1000/**MB	①4256×2848/**MB ②3024×2016/**MB ③2304×1536/**MB ④1440×960/**MB	
	Simultaneous .jpeg recording within .crw	Yes (Extracted with dedicated driver software)	—	N/A	—
	DCF/DPOF compatible	Yes/Yes	***	Yes/Yes	—/—
LCD monitor	Type	TFT	TFT	TFT	TFT
	Size	1.8	1.8	1.8	1.8
	Pixels	11.4	11.8	11.7	13
Custom Functions		38	Yes	18	*
External interface		①USB ②Video output	①USB ②Video output	①USB ②IEEE 1394 ③Video output	①USB ②IEEE1394 ③Video output
Control via computer		Yes	Yes	Yes	***
Power source	Battery	BP-511 (Lithium ion)	One Li-ion EN-EL3	4 size-AA or 2 CR123A	2 CR123A + 2 CR-V3 or 4 size-AA
	AC power	Yes	Yes	Yes	Yes
Battery life (Normal temp./No of shots)		620 (AE100%)	***	***	***
Moisture/Dust resistance		N/A	—	N/A	Yes (no dust to imager)
Chassis material		Plastic/Stainless steel	***	***	***
Exterior	Material	Plastic	***	Plastic	***
	Color	Black	Black	Black	Black
Guranted temperature range (degree C)		0 - +40	***	0 - +40	*** - + ***
Dimensions (W×H×D)		149.5×106.5×75	144×116×80.5	141.5×131.0×79.5	152×120×79
Weight (body only/g)		780	700	790/760	803
Marketing date		2002	***	2002/Jun	2002/Jun
Retail price (Yen)		***	***	***	($3,000)
Remarks				Multiple exposure	

Table 7 Comparison with Competing Models

9.2 Comparison with EOS Cameras

(Shaded EOS D60 specifications are superior to EOS D30's)

Item				EOS D60	EOS D30	EOS-1D
Imaging	Imaging Element/Effective Pixels			CMOS/6.30 megapixels	CMOS / 311	CCD/4.16 megapixels
	Effective Sensor Size			→	22.7 × 15.1mm	28.7 × 19.1mm
	Color Filter Type			→	Primary colors	Primary colors
	Low-Pass Filter			→	Built-in/Fixed	Built-in/Fixed
	35mm Focal Length Equivalent			→	Approx. 1.6 .	Approx. 1.3×
Image Recording	Recording Medium			→	Compact Flash card	Compact Flash card
	Slot Type/Qty			→	CF Type I, II / 1 slot	CF Type I, II / 1 slot
	Recording Format/ Image Size	Large	Fine	3072×2048 2.5 MB	2160×1440 1.3 MB	2464×1648 2.4 MB
			Normal	3072×2048 1.3 MB	2160×1440 0.7 MB	2464×1648 1.3 MB
		Middle	Fine	2048×1360 1.4 MB	—	—
			Normal	2048×1360 0.7 MB	—	—
		Small	Fine	1536×1024 0.9 MB	1440×960 0.7 MB	1232×824 1.1 MB
			Normal	1536×1024 0.5 MB	1440×960 0.4 MB	—
		RAW		3072×2048 7.4 MB	2160×1440 3.4 MB	2496×1662 4.8 MB
	RAW & JPEG Simultaneous Recording			△	—	Provided
Viewfinder	Superimposed Display			Provided	—	Provided
	Coverage (Vertical/Horizontal)			→	95%	100%
	Magnification (at -1 dpt with 50mm lens set to ∞)			→	0.88×	0.72×
	Eyepoint			→	20mm	20mm
	Dioptric Adjustment			→	-3 to +1 dpt.	-3 to +1 dpt.
	Interchangeable Focusing Screens			→	—	Provided
	Eyepiece Shutter			→	—	Provided
AF	AF Points			→	3	45
	AF Modes			→	AI FOCUS/ONE SHOT/ AI SERVO	ONE SHOT/AI SERVO
	Predictive AF at 50 kph w/300mm f/2.8L IS			→	12m	8m
	AF Point Registration/Shift			→	—	Provided
Exposure Control	Shooting Modes			→	11	4
	Metering Segments			→	35	21
	Metering Modes			→	Evaluative, partial, centerweighted	Evaluative, partial, spot, multi-spot, centerweighted
	ISO Speed	Range		100,200,400,800,1000	ISO 100-1600 in whole stops	ISO 200-1600 in 1/3 stops
		Push Setting		→	—	Provided
		ISO Speed Shifting		→	—	Provided
	Exposure Compensation	Increments and Range		→	1/2,1/3-stop increments,+/-2	1,1/2,1/3-stop increments, +/-3
		Type		→	Manual, AEB	Manual, AEB, ISO
Shutter	Type			→	Mechanical	Mechanical + Electronic
	Speeds, X-sync			→	1/4000 sec.- 30 sec.,1/200 sec.	1/16000 sec.- 30sec.,1/500 sec.

Table 1 Comparison of EOS D60, EOS D30, and EOS-1D Specifications

Item		EOS D60	EOS D30	EOS-1D
Flash Control	E-TTL Autoflash, FP Flash	→	Provided	Provided
	FE Lock, FEB	→	Provided	Provided
	Wireless Multi-Speedlite Flash	→	Provided	Provided
	Built-in Flash/G. No.	→	Provided/12	—
	Metered Manual	→	—	Provided
Drive	Continuous Shooting Speed	→	3 fps	8 fps
	Max. Burst	8	30 (Small/Normal)	21
	Self-timer	→	10 sec.	10 sec. or 2 sec.
White Balance	Type	→	Imaging element	Imaging element & dedicated sensor
	Settings	→	7	9
	WB Bracketing	→	—	—
LCD Monitor	Type	→	TFT	TFT
	Screen Size	→	1.8 in.	2.0 in.
	Pixels (Approx.)	→	114,000	120,000
Playback/ Tags	Display Formats	→	4	4
	Highlight/Magnified Display	→	Provided/Provided	Provided/ —
	Image Erase Protection		1 image	1 image / ■ / all in CF
	Image Erase	→	1 image / all in CF	1 image / ■ / all in CF
	IPTC Tag	→	—	Provided
	DCF/DPOF	Provided/1.1	Provided/1.0	Provided/ —
	Sound Recording	→	—	Provided
Custom Functions/Settings		14/38	13/34	21/64
Personal Functions/Settings		→	—	25
External Interface		→	USB/Video	IEEE 1394
Remote control/PC terminal		→	Provided	Provided
Battery		→	Lithium ion	Ni-MH
Battery life (at 20℃)	AE 100%	620	680	***
	AE 50%,FA 50%	490	540	—
LCD Panel (EL) Illumination		Provided	—	Provided
Water/Dust Resistance		→	Provided	Provided
Top/Front/Rear Cover Material		→	Plastic	Magnesium alloy
Chassis Material		→	Plastic & stainless steel	Magnesium alloy
Working Temperature Range		→	0℃ to 40℃	0℃ to 45℃
Dimensions (W×H×D)		149.5×106.5×75 mm 5.9×4.2×3.0 in	149.5×106.5×75 mm 5.9×4.2×3.0 in	156×157.6×79.9 mm 6.1×6.2×3.1 in
Weight (excluding battery and accessories)		780 g / 27.5 oz.	780 g / 27.5 oz.	1250 g / 44 oz.
Remarks				

10. OPERATION CAUTIONS

10.1 Operaton Cautions

☐ : New cautions which apply to the EOS D30 and EOS D60. (Other EOS D30 operation cautions not mentioned here also apply to the EOS D60)

Cautions	Remarks
☐ 1. When cleaning the CMOS sensor, use only a hand blower to blow off dust, etc. Never touch the CMOS surface with any brush, cloth, or cleaning agent. Also do not use pressurized (canned) air or gas to clean the CMOS sensor.	This is to prevent damage to the CMOS.
☐ 2. If the 550EX, MR-14EX, or MT-24EX fails to recycle fast enough during continuous shooting with FEB, the shutter release locks. After the shutter button is released from the fully depressed position, AE metering takes effect before the flash is ready.	Normally, AE metering takes effect if the Speedlite is not ready. If during FEB continuous shooting the flash fails to recycle and AE takes immediate effect, the AE-metered picture in the shooting sequence would look unnatural. The shutterrelease lock prevents this.
☐ 3. With the EF 70-200mm f/2.8L USM attached with an Extender, use the center AF point to focus.	Focusing precision cannot be assured with the peripheral AF points.
☐ 4. If you use the AI SERVO AF mode with flash, the built-in flash's AF-assist beam will not be emitted. (If the AF mode is set to ONE SHOT AF, AF-assist beam will be emitted automatically if necessary.)	Since it does not match predictive AF very well, this has been incorporated in the design. ONE-SHOT AF is recommended for flash photography.
☐ 5. Before displaying captured images on a TV monitor, check whether it uses the NTSC or PAL system.	If the TV monitor uses a different system, the images will not be displayed properly. (The default setting : JPN, USA = NTSC / other areas = PAL)
☐ 6. If there is a strong light source within the image area, ghosting might occur at a point symmetrical to position or near the light source.	As per the design.
☐ 7. If a high ISO speed is set, fewer images can be captured.	As per the design. The LCD panel can show how many remaining shots can be captured for the ISO speed you set.
8. If a picture is taken under a high temperature, with a high ISO speed, or with a long exposure, the color in the picture might look irregular.	As per the design.
9. If the CF card's remaining space is enough for less than 8 shots, continuous shooting might not be possible.	This is because the CF card's remaining space is checked.
10. During continuous shooting, a folder may store 101 or more images. However, the last continuous shot taken will be stored in the next folder.	As per the design.

10.2 Built-in Flash and EF Lens Compatibility

◎ : No cut-off even with a dedicated hood attached.
△ : Cut-off will occur with a hood attached, but there is no cut-off without a hood.
× : Incompatible--cut-off occurs even without a hood attached.
— : Not applicable. The lens is outside the effective flash coverage or application.

No.	Lens	Hood	Subject Distance (m)							
			0.5	1	2	3	4	5	6	7
001	EF14mm f/2.8 L	Built-in	—	—	—	—	—	—	—	—
002	EF15mm f/2.8 FE	Built-in	—	—	—	—	—	—	—	—
003	EF20mm f/2.8 USM	EW-75 II	—	△	△	△	△	△	△	△
004	EF24mm f/1.4 L USM	EW-83D II	—	△	△	△	△	△	△	△
005	EF24mm f/2.8	EW-60 II	—	◎	◎	◎	◎	◎	◎	◎
006	EF28mm f/1.8 USM	EW-63 II	—	◎	◎	◎	◎	◎	◎	◎
007	EF28mm f/2.8	EW-65 II	—	◎	◎	◎	◎	◎	◎	◎
008	EF35mm f/1.4 L USM	EW-78C	—	△	△	△	△	△	△	△
009	EF35mm f/2	EW-65 II	—	◎	◎	◎	◎	◎	◎	◎
010	EF50mm f/1.0 L USM	ES-79 II	—	△	△	△	△	△	△	△
011	EF50mm f/1.4 USM	ES-71 II	—	◎	◎	◎	◎	◎	◎	◎
012	EF50mm f/1.8	ES-65	—	◎	◎	◎	◎	◎	◎	◎
013	EF50mm f/1.8 II	ES-62	—	◎	◎	◎	◎	◎	◎	◎
014	EF50mm f/2.5 MACRO	None	—	△	△	△	△	△	△	△
	(EF50mm f/2.5 MACRO+LSC)	—	—	—	—	—	—	—	—	—
015	MP-E 65mm f/2.8 1-5×	None	—	—	—	—	—	—	—	—
016	EF85mm f/1.2 L USM	ES-79 II	—	△	◎	◎	◎	◎	◎	◎
017	EF85mm f/1.8 USM	ET-65 III	—	◎	◎	◎	◎	◎	◎	◎
018	EF100mm f/2 USM	ET-65 III	—	◎	◎	◎	◎	◎	◎	◎
019	EF100mm f/2.8 MACRO USM	ET-67	—	◎	◎	◎	◎	◎	◎	◎
020	EF100mm f/2.8 MACRO	None	—	△	△	△	△	△	△	△
021	EF135mm f/2 L USM	ET-78 II	—	◎	◎	◎	◎	◎	◎	◎
022	EF135mm f/2.8 SF	ET-65 III	—	—	◎	◎	◎	◎	◎	◎
023	EF180mm f/3.5L MACRO USM	ET-78 II	—	△	◎	◎	◎	◎	◎	◎
024	EF200mm f/1.8 L USM	ET-123	—	—	—	×	×	×	×	×
025	EF200mm f/2.8 L USM	Built-in	—	—	◎	◎	◎	◎	◎	◎
026	EF200mm f/2.8 L II USM	ET-83B II	—	—	◎	◎	◎	◎	◎	◎
027	EF300mm f/2.8 L IS USM	ET-120	—	—	×	×	×	×	×	×
028	EF300mm f/2.8 L USM	ET-118 II	—	—	×	×	×	×	×	×
029	EF300mm f/2.8 L II USM	ET-118 II	—	—	×	×	×	×	×	×
030	EF300mm f/2.8 L III USM	ET-118 II	—	—	×	×	×	×	×	×
031	EF300mm f/4 L IS USM	Built-in	—	—	◎	◎	◎	◎	◎	◎
032	EF300mm f/4 L USM	Built-in	—	—	—	◎	◎	◎	◎	◎
033	EF400mm f/2.8 L IS USM	ET-155	—	—	—	—	×	×	×	×
034	EF400mm f/2.8 L USM	ET-161B II	—	—	—	—	×	×	×	×
035	EF400mm f/2.8 L II USM	ET-161B II	—	—	—	—	×	×	×	×
036	EF400mm f/4 DO IS USM	ET-120	—	—	—	—	×	×	×	×
037	EF400mm f/5.6 L USM	Built-in	—	—	—	—	◎	◎	◎	◎
038	EF500mm f/4 L IS USM	ET-138	—	—	—	—	—	×	×	×
039	EF500mm f/4.5 L USM	ET-123B	—	—	—	—	—	×	×	×
040	EF500mm f/4.5 L II USM	ET-123B	—	—	—	—	—	×	×	×
041	EF600mm f/4 L IS USM	ET-160	—	—	—	—	—	—	×	×
042	EF600mm f/4 L USM	ET-161 II	—	—	—	—	—	—	×	×
043	EF600mm f/4 L II USM	ET-161 II	—	—	—	—	—	—	×	×
044	EF1200mm f/5.6 USM	Built-in	—	—	—	—	—	—	—	—
045	TS-E24mm f/3.5L	EW-75B II	—	△	△	△	△	△	△	△
046	TS-E45mm f/2.8	EW-79B II	—	△	△	△	△	△	△	△
047	TS-E90mm f/2.8	ES-65 III	—	◎	◎	◎	◎	◎	◎	◎

◎ : No cut-off even with a dedicated hood attached.
△ : Cut-off will occur with a hood attached, but there is no cut-off without a hood.
× : Incompatible--cut-off occurs even without a hood attached.
— : Not applicable. The lens is outside the effective flash coverage or application.

No.	Lens	Hood	Subject Distance (m)															
			0.5		1		2		3		4		5		6		7	
			W	T	W	T	W	T	W	T	W	T	W	T	W	T	W	T
048	EF16-35mm f/2.8 L USM	EW-83E	—	—	×	△	×	△	×	△	×	△	×	△	×	△	×	△
049	EF17-35mm f/2.8 L USM	EW-83C II	—	—	×	△	×	△	×	△	×	△	×	△	×	△	×	△
050	EF20-35mm f/2.8 L	EW-75	—	—	×	△	×	△	△	△	△	△	△	△	△	△	△	△
051	EF20-35mm f/3.5-4.5 USM	EW-83 II	—	—	△	△	△	△	△	△	△	△	△	△	△	△	△	△
052	EF22-55mm f/4-5.6 USM	EW-60D	—	—	△	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
053	EF24-85mm f/3.5-4.5 USM	EW-73 II	—	—	△	◎	△	◎	△	◎	△	◎	△	◎	△	◎	△	◎
054	EF28-70mm f/2.8 L USM	EW-83B II	—	—	×	△	×	△	×	△	×	△	×	△	×	◎	×	◎
055	EF28-70mm f/3.5-4.5	EW-68A	—	—	△	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
056	EF28-70mm f/3.5-4.5 II	EW-68A	—	—	△	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
057	EF28-80mm f/2.8-4 L USM	EW-79	—	—	△	△	△	◎	△	◎	△	◎	△	◎	△	◎	△	◎
058	EF28-80mm f/3.5-5.6	EW-60C	—	—	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
059	EF28-80mm f/3.5-5.6 II	EW-60C	—	—	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
060	EF28-80mm f/3.5-5.6 USM	EW-68A	—	—	△	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
061	EF28-80mm f/3.5-5.6 II USM	EW-60C	—	—	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
062	EF28-80mm f/3.5-5.6 III USM	EW-60C	—	—	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
063	EF28-80mm f/3.5-5.6 IV USM	EW-60C	—	—	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
064	EF28-80mm f/3.5-5.6 V USM	EW-60C	—	—	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
065	EF28-90mm f/3.5-5.6	EW-60C	—	—	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
066	EF28-90mm f/3.5-5.6 USM	EW-60C	—	—	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
067	EF28-105mm f/3.5-4.5 USM	EW-63 II	—	—	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
068	EF28-135mm f/3.5-5.6 IS USM	EW-78B II	—	—	△	△	△	◎	△	◎	△	◎	△	◎	△	◎	△	◎
069	EF28-200mm f/3.5-5.6	EW-78D	—	—	△	△	△	◎	△	◎	△	◎	△	◎	△	◎	△	◎
070	EF28-200mm f/3.5-5.6 USM	EW-78D	—	—	△	△	△	◎	△	◎	△	◎	△	◎	△	◎	△	◎
071	EF35-70mm f/3.5-4.5	EW-68B	—	—	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
072	EF35-70mm f/3.5-4.5 A	EW-68B	—	—	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
073	EF35-80mm f/4-5.6 PZ	None	—	—	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
074	EF35-80mm f/4-5.6	EW-62	—	—	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
075	EF35-80mm f/4-5.6 II	EW-54 II	—	—	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
076	EF35-80mm f/4-5.6 III	EW-54 II	—	—	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
077	EF35-80mm f/4-5.6 USM	EW-54 II	—	—	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
078	EF35-105mm f/3.5-4.5	EW-68B	—	—	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
079	EF35-105mm f/4.5-5.6	EW-68B	—	—	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
080	EF35-105mm f/4.5-5.6 USM	EW-60B	—	—	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
081	EF35-135mm f/3.5-4.5	EW-68B	—	—	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
082	EF35-135mm f/4-5.6 USM	EW-62	—	—	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
083	EF35-350mm f/3.5-5.6 L USM	EW-78 II	—	—	×	—	×	—	×	△	×	◎	×	◎	×	◎	×	◎
084	EF38-76mm f/4.5-5.6	EW-54 II	—	—	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
085	EF50-200mm f/3.5-4.5	ET-62 II	—	—	△	△	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
086	EF50-200mm f/3.5-4.5 L	ET-62 II	—	—	—	—	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
087	EF55-200mm f/4.5-5.6 USM	ET-54	—	—	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
088	EF70-200mm f/2.8 L IS USM	ET-86	—	—	△	△	△	△	△	◎	△	◎	△	◎	△	◎	△	◎
089	EF70-200mm f/2.8 L USM	ET-83 II	—	—	△	△	△	△	△	◎	△	◎	△	◎	△	◎	△	◎
090	EF70-200mm f/4 L USM	ET-74	—	—	—	—	△	◎	△	◎	△	◎	△	◎	△	◎	△	◎
091	EF70-210mm f/4	ET-62 II	—	—	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
092	EF70-210mm f/3.5-4.5 USM	ET-65 II	—	—	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
093	EF75-300mm f/4-5.6	ET-65 II	—	—	—	—	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
094	EF75-300mm f/4-5.6 II	ET-60	—	—	—	—	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
095	EF75-300mm f/4-5.6 III	ET-60	—	—	—	—	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
096	EF75-300mm f/4-5.6 USM	ET-60	—	—	—	—	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
097	EF75-300mm f/4-5.6 II USM	ET-60	—	—	—	—	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
098	EF75-300mm f/4-5.6 III USM	ET-60	—	—	—	—	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
099	EF75-300mm f/4-5.6 IS USM	ET-64 II	—	—	—	—	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
100	EF80-200mm f/2.8 L USM	ES-79	—	—	—	—	△	◎	△	◎	△	◎	△	◎	△	◎	△	◎
101	EF80-200mm f/4.5-5.6	ET-62 II	—	—	—	—	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
102	EF80-200mm f/4.5-5.6 II	ET-54	—	—	—	—	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
103	EF80-200mm f/4.5-5.6 USM	ET-54	—	—	—	—	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
104	EF100-200mm f/4.5 A	ET-62 II	—	—	—	—	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
105	EF100-300mm f/5.6	ET-62 II	—	—	—	—	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
106	EF100-300mm f/5.6 L	ET-62 II	—	—	—	—	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
107	EF100-300mm f/4.5-5.6 USM	ET-65 III	—	—	—	—	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
108	EF100-400mm f/4.5-5.6 IS USM	ET-83C	—	—	—	—	△	△	△	△	△	△	△	◎	△	◎	△	◎

Part 2

Technical Information

1.TECHNICAL DESCRIPTION

1.1 CMOS sensor imaging element

1) Major features

The camera has a Canon-developed, ultra-large, single-piece CMOS (complementary metal oxide semiconductor) sensor to give the camera the best resolution in its class. Primary-color filters are used to obtain accurate and vibrant color reproduction. Except for the smaller pixel size, the CMOS sensor's size is the same as the EOS D30's. The major specifications are shown in Table.

The imaging element now has more pixels. The area of each pixel is about half that of the pixels on the EOS D30's imaging element. This smaller size makes the imaging element less sensitive. To compensate, the design and process have been revamped so that the aperture is larger and the micro lenses have more efficient convergence. Thus, ISO speeds of 100, 200, 400, 800, and 1000 are possible.

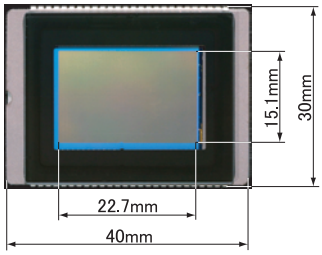


Fig. 2-1 CMOS sensor (actual size)

Effective pixels	Approx. 6.30 megapixels: 3088×2056
Total pixels	Approx. 6.52 megapixels: 3152×2068
Sensor size (mm)	24.9×18.1
Effective sensor size (mm)	22.7×15.1
Pixel size (μm)	7.4×7.4
Color filter	Primary-color filter
Aspect ratio	2:3

CMOS Sensor Specifications

2) Picture coverage

As with the EOS D30, the effective picture coverage (angle of view) will be equivalent to a lens with 1.6 times the EF lens' marked focal length.

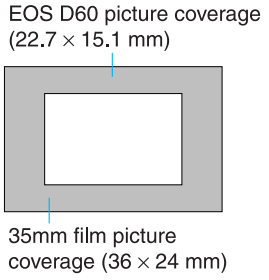


Fig. 2-2 Picture coverage comparison (actual size).

3) Noise reduction of imaging element

With the CMOS sensor's dark current reduction and the image-reading circuit's noise reduction, the image recording is clear even for long exposures. As shown by Fig.2-4, it even looks better than the EOS D30's image taken in the noise reduction mode. Thanks to this major improvement, the EOS D60 does not require noise reduction for long exposures as the EOS D30 did, so C.Fn-1 has been eliminated.

This improvement also has helped enhance the normal photographic sequence. As a result, the shutter-release time lag is also more stable.

Fig.2-4 compares images taken at the 30-sec. shutter speed.

4) Countermeasures for red ghosting

With the EOS D30, when there was a strong light source within the picture, red ghosting would appear symmetrically or near the light source depending on the shooting conditions. In the EOS D60's Low Pass Filter (LPF) assembly, by switching to a hybrid construction consisting of the optical low-pass/IR cut filter, the dichroic mirror with a new coating that changes the spectral transmittance in front of the LPF and the IR absorption glass with new absorption characteristic behind the LPF, the red ghosting problem has been almost completely resolved.

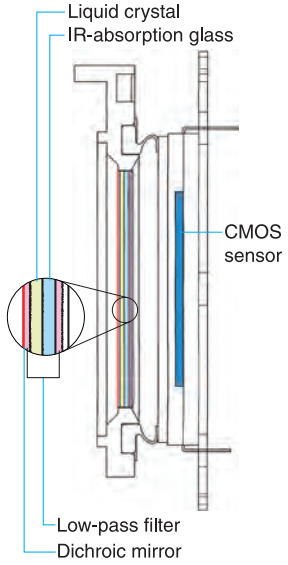


Fig. 2-3 LPF construction.

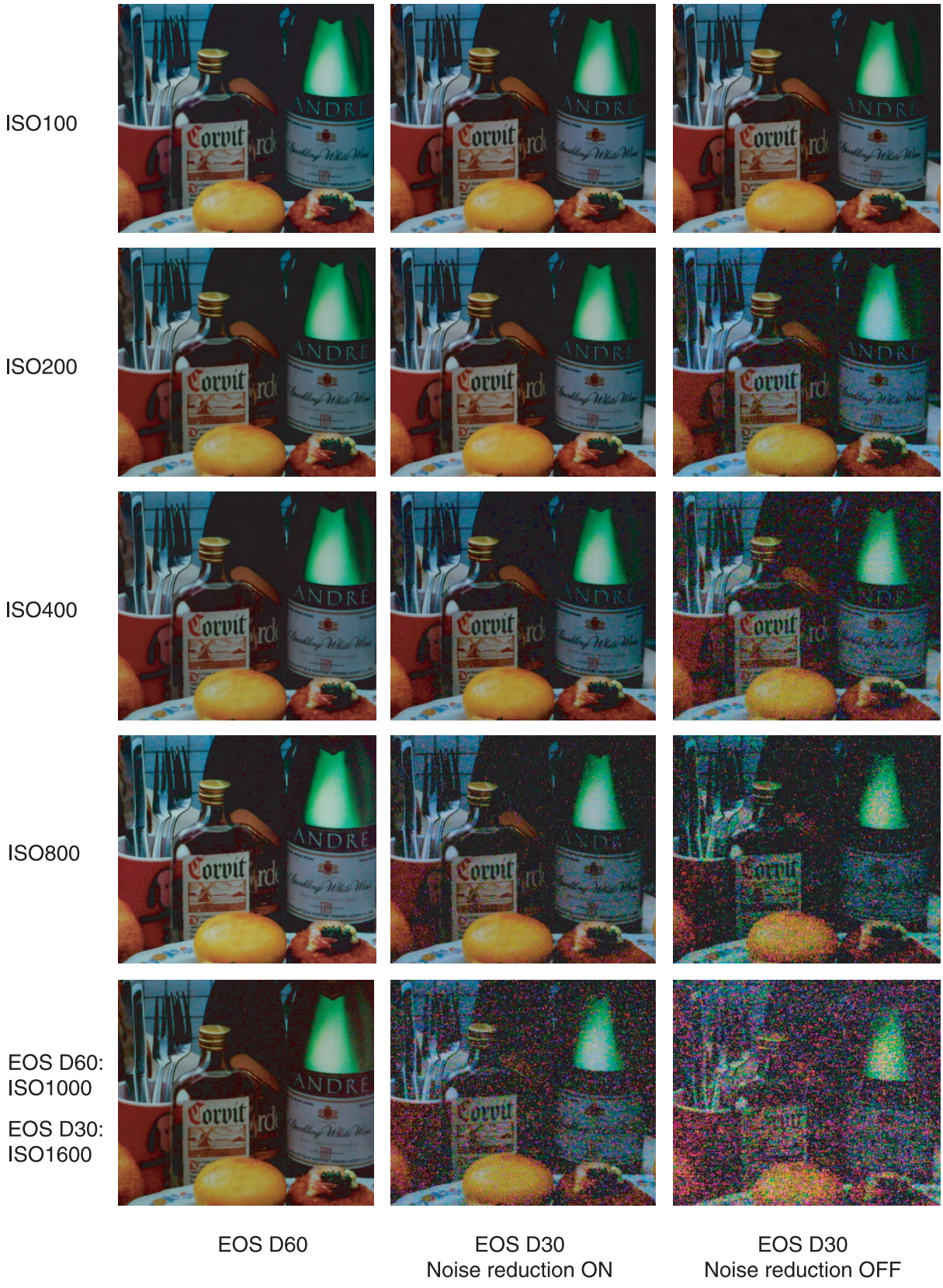


Fig. 2-4 Comparison of images taken at 30 sec. (cropped portions)

1.2 Image recording and processing

1) Imaging engine

The EOS D60's imaging engine (system LSI) is an improved version of the EOS D30's imaging engine that was designed to incorporate primary-color filters. The major features are as follows:

- Newly-developed signal-processing algorithm
- Faster signal processing
- Faster JPEG compression and decompression
- Thumbnail image-generating circuit produces better image quality

2) Image quality

Images can be recorded in one of six JPEG settings (lossy compression) and RAW (lossless compression)/12 bit). The EOS D60 has two more image quality settings (Middle/Fine and Middle/Normal) than the EOS D30 for a total of seven image quality settings. You can select the image quality setting according to the pixel count or compression rate.

Also, the EOS D60's RAW images have a JPEG-Middle/Fine image in the thumbnail-recording area within the .crw file. By using the dedicated driver (provided), you can now extract the JPEG file from the RAW image.

With the EOS D30, the image quality was fixed at Large/Fine in the Easy Shooting Zone modes. However, with the EOS D60, you can set any image quality.

Image Quality	Pixels Recorded	Recording Format	Compression Rate	File Size (Approx. MB)	Recordable Images with 128 MB CF card (Approx. MB)
Large/Fine	3072×2048	JPEG	Low	2.5	48
Large/Normal			High	1.3	92
Middle/Fine	2048×1360		Low	1.4	89
Middle/Normal			High	0.7	172
Small/Fine	1536×1024		Low	0.9	138
Small/Normal			High	0.5	255
RAW	3072×2048	Lossless RAW	—	7.4	15

Image Quality

3) ISO speed setting

The ISO speed can be set to 100, 200, 400, 800, or 1000. All the ISO speeds are equivalent to the respective film speeds.

Although ISO 1600 is provided by the EOS D30, the EOS D60 does not. Since the EOS D60's imaging element has more pixels, the smaller pixel size results in lower sensitivity and S/N ratio. Since the EOS D30's image quality at ISO 1600 would be difficult to obtain with the EOS D60, ISO 1600 was not included.

4) Processing parameters (image-processing settings)

Besides the three processing parameters (contrast, sharpness, color saturation) provided by the EOS D30, the EOS D60 also has color balance for a total of four processing parameters. Besides the "Standard (all set to 0)" setting, up to three sets of parameter settings can be set with the camera.

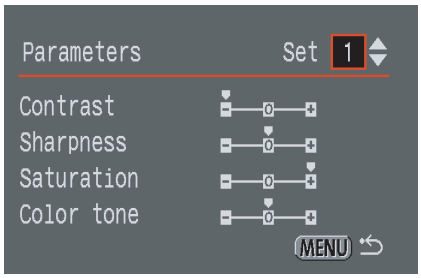


Fig. 2-5 Processing parameters.

"Color balance" is mainly used to adjust flesh tones for portraits. Adjustment toward the minus side makes it redder, and the plus side makes it yellower.
To set the processing parameters with the EOS D30, the camera must be connected to a personal computer and a driver is necessary. However, with the EOS D60, the processing parameters can be set with the menu functions displayed on the rear LCD monitor.

5) White balance

With a TTL system that uses the imaging element, optimum white balance can always be attained under various shooting conditions. The selectable settings are the same as the EOS D30's white balance settings.

The only difference is that the color temperature for the "Daylight" setting has been changed from 5500 K to 5200 K for better image quality.

Setting	Color Temperature (Approx. Kelvin)
Auto	3000—7000
Daylight	5200
Cloudy	6000
Light bulb	3200
Fluorescent light	4000
Flash	6000
Manual	2000—10000

White Balance Settings

6) File numbering system for recorded images

It is the same as with the EOS D30.

1.3 AF system

1) Configuration of focusing optics

It is the same as the EOS D30.

2) High-speed AF and focusing computation

(1) Brightness range for AF

With improved maximum accumulation time for the AF and improved AF algorithm, AF performance limit in low light has been improved by 1.5 stops (EV 2 to EV 0.5).

(2) AF speed, AF point automatic selection algorithm, and predictive AF control

These are all the same as the EOS D30.

3) AF-assist light

As with the EOS D30, the EOS D60 has a built-in krypton lamp for the AF-assist light. The AF-assist light is linked to the three AF points.

The AF-assist light turns on automatically when the ambient light level is EV 4 or lower or when the AF has difficulty achieving focus. With the EOS D30, the AF-assist light can light up to three consecutive times. With the EOS D60, it can light up to six consecutive times (current point of focus → near point → far point: twice each). This improves the chances of obtaining accurate focus in low light. The AF-assist light's effective range is about 3.8 m at the viewfinder's center, the same as the EOS D30's AF-assist light.

When an EX-series Speedlite is used with the camera, the AF-assist light is emitted in the same way as with the EOS D30. With the 550EX and 420EX, AF-assist is emitted by the external Speedlite. With the 220EX and 380EX, the external Speedlite's AF-assist beam is emitted only when the center AF point has been selected. If an off-center AF point has been selected, the camera's AF-assist light will be emitted instead.

With C.Fn-5 (AF-assist/flash), you can now disable the camera's built-in AF-assist light or the Speedlite's AF-assist beam.

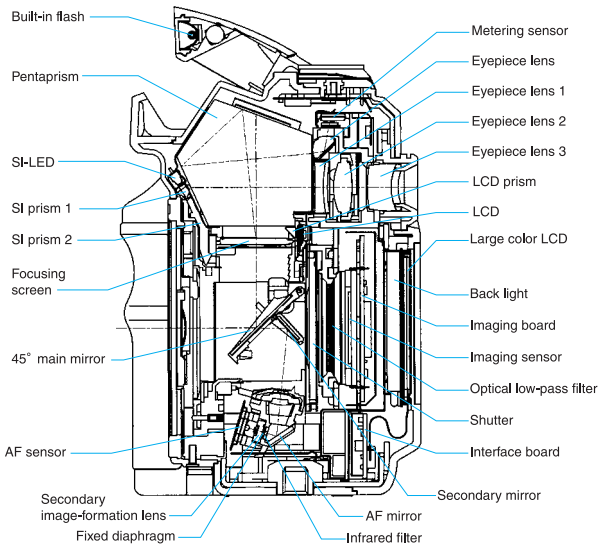


Fig. 2-6 Cross section at center.

1.4 Viewfinder

1) Viewfinder optics

The configuration and specifications (0.88× viewfinder magnification, 95% picture coverage, 20mm eye relief) are the same as the EOS D30's viewfinder. Note that although the focusing screen is the same New Laser Matte type, the dispersion characteristics have been improved to make it easier to discern the focus point during manual focusing.

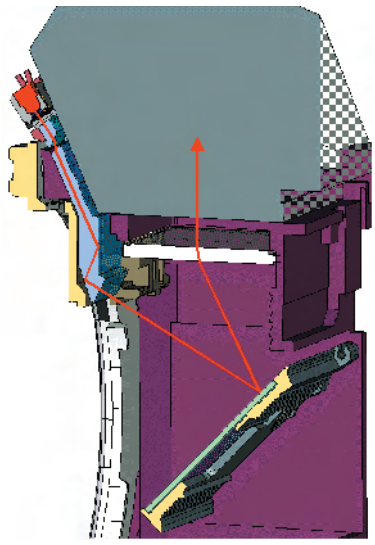


Fig. 2-7 SI display optics.

2) SI (Superimpose) display optics

The SI display optics for the AF points include three small SI-LEDs (1.9 dia) in front of the pentaprism. The light from the SI-LEDs passes through SI prisms 1 and 2 and the main mirror before reaching the AF points on the focusing screen. The SI display brightness is about the same as the EOS ELAN 7/7E, 30/33's.

3) Dioptric correction mechanism

It is the same as the EOS D30.

4) Viewfinder information display

Compared to the EOS D30's information display, the EOS D60 provides more information with the following four new information displays at the bottom of the viewfinder:

(1) SI display

The display and AF point selection method are the same as with the EOS ELAN II/ELAN II E, 50/50E.

(2) Flash exposure compensation icon

Lights when flash exposure compensation has been set with the built-in flash or external Speedlite.

(3) Maximum burst during continuous shooting

During continuous shooting, the current maximum burst is displayed from 0 to 8 according to the amount of available buffer memory. Regardless of the drive mode, the maximum burst decreases with each shot taken. (As with the EOS D30, while the shutter button is fully depressed during continuous shooting, the viewfinder information is not displayed. The maximum burst thus cannot be known.) When the captured images are saved on the CF card and more buffer memory becomes available, the

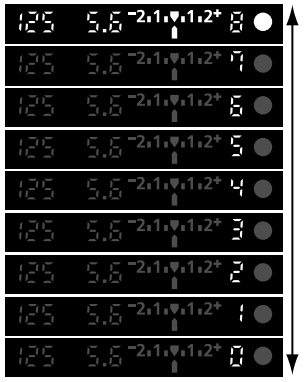


Fig. 2-8 Maximum burst display during continuous shooting.

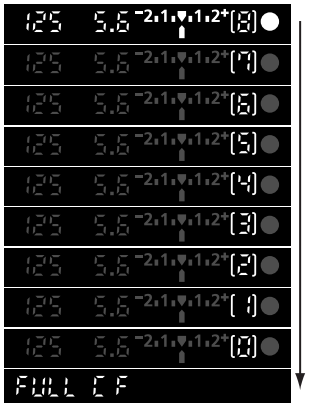


Fig. 2-9 Remaining shots display.

maximum burst increases. Normally, "8" is displayed for the maximum burst.

(4) Shots remaining

When the CF card has room for less than 8 shots taken in the current image quality mode, the shots remaining will be displayed automatically in place of the maximum burst. The shots remaining decreases from [8] to [0] with each shot taken. When the CF card becomes full, "FULL CF" is displayed.

1.5 Exposure control mechanism

1) Metering

The metering optics, 35-zone AE sensor, and metering modes (evaluative, partial, center weighted average) are the same as the EOS D30's. The metering algorithm is based on the EOS D30's, but since there were a few user complaints about the exposure shifting when the picture was slightly recomposed, the metering algorithm's α compensation increment has been made finer, from 1/2 to 1/4, to obtain more stable exposure control.

2) Exposure control

It is the same as with the EOS D30.

1.6 Drive

1) Continuous shooting speed

It is the same as with the EOS D30.

2) Maximum burst during continuous shooting

With the EOS D30, the maximum burst for Large/Fine is about 8 as shown in Table 11. In the other image quality settings, the maximum burst varies. However, with the EOS D60, the maximum burst is always 8 regardless of the image quality and ISO speed.

Image Quality	Max. Burst During Continuous Shooting	
	EOS D30	EOS D60
Large/Fine	Approx. 8	8
Large/Normal	Approx. 17	
Middle/Fine	—	
Middle/Normal	—	
Small/Fine	Approx. 17	
Small/Normal	Approx. 30	
RAW	Approx. 3	

Maximum Burst

* Despite the EOS D60's higher number of pixels (more data per shot), the maximum continuous shooting speed of 3 fps is maintained and the maximum burst during continuous shooting is also maintained at the same level as the EOS D30's. To achieve this, the buffer memory was increased and the image processing that the EOS D30 executed during continuous shooting was eliminated (as shown by Fig. 2-10's red arrows, the image is processed in accordance with the stipulated image quality and parameters from the 1st to 2nd buffers). As a result, the maximum burst is always 8, limited only by the 1st buffer memory's capacity.

* During RAW shooting with the EOS D30, the maximum burst during continuous shooting was 3 shots due to the 2nd buffer's capacity

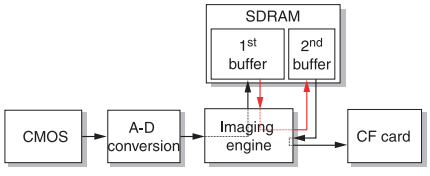


Fig. 2-10 Image-processing flow.

limit. With the EOS D60, a maximum burst of 8 is possible in the RAW mode. Continuous shooting in the RAW mode is therefore now more practical with the EOS D60.

1.7 LCD panel

Except for the addition of Middle/Fine and Middle/Normal, the information displayed is the same as the EOS D30's LCD panel.

EOS D60 now has LCD panel illumination (EL backlight).

When "LCD panel illumination" is enabled with the on-screen menu, pressing the SET button turns the LCD panel illumination on or off. The illumination time is about 4 sec, but it will stay on if you operate any buttons or dials to take a picture.

Fig. 2-11 LCD panel illumination

* If C.Fn-12-1/2/3 (SET button function during shooting) has been set, pressing SET will not turn off the LCD panel illumination (it will turn off automatically).

1.8 Built-in flash

It is the same as the EOS D30's built-in flash.

1.9 Basic operation concept and LCD panel display

1) Operation concept

The EOS D60's operation concept is based on the EOS D30. Regardless of what mode the camera is currently in, the camera will immediately be able to take a picture when you press the shutter button or any of the shooting-related buttons (metering mode/flash exposure compensation button, drive mode button, AF mode/WB button, AE/FE lock button, AF point selector).

2) LCD monitor

(1) LCD monitor

The 1.8-in. TFT color monitor on the back of the camera is the same size as the EOS D30's. You can check the images you shot and view on-screen menus to set various options.

The TFT color monitor has a sheet of material which increases the screen brightness. The brightness at a viewing angle from 0°C to about +/-40°C is the same as the EOS D30's TFT monitor. The brightness at viewing angles greater than 40°C is now much higher as shown in Fig. 2-13.

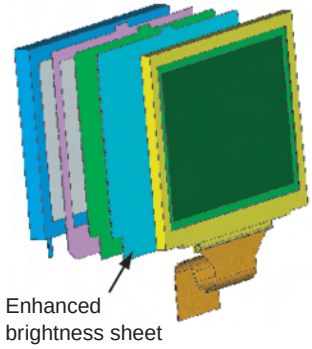


Fig. 2-12 TFT monitor construction.

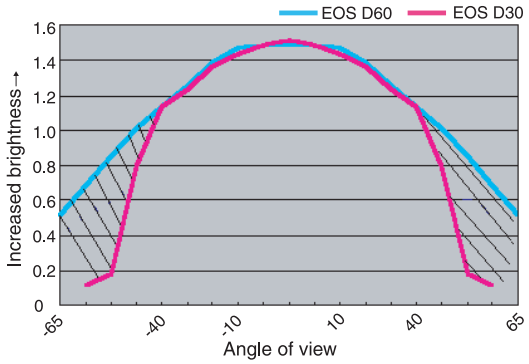


Fig. 2-13 TFT monitor brightness comparison.

(2) Menu configuration

The menu's basic configuration is the same as the EOS D30's with three menu groups: Shooting, playback, and setup. They are looping menus. Three new menu options have been added: "LCD panel illumination," "C.Fn cancel," and "Firmware ver." The menu options are displayed in Table.

Regarding CF card initialization, the name has been changed from "CF card initialize" to "Card initialize." This is to prevent confusion with C.Fn.

	Shooting	Playback	Setup
Menu Items	Image quality	Image protect	LCD brightness
	Red-eye reduction	Image rotation	Date/time
	AEB	Print specification	File No.
	ISO speed	Auto play	Language
	LCD panel illumination	Auto power off	Video OUT format
	Beeper	Image review	Card initialize
	M-WB image selection	Image review time	C.Fn
	Processing parameters		C.Fn cancel
			Firmware ver.

Menu Options

3) Playback/Erase protection

It is the same as the EOS D30.

4) Information display

The method for displaying the shooting/playback information is the same as the EOS D30. The information displayed is the same as the EOS D30 except for the following two changes:

Camera Info.: The processing parameter information has been changed to "-/0/+" to match the displayed setting.

Single-frame display Info.: The "F" indicating the aperture has been eliminated.

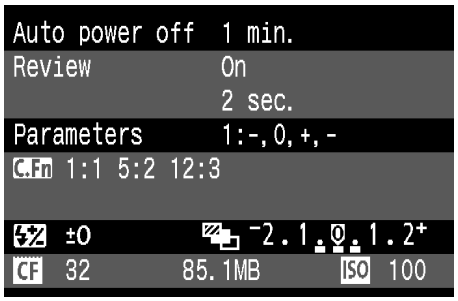


Fig. 2-14 Camera Info.

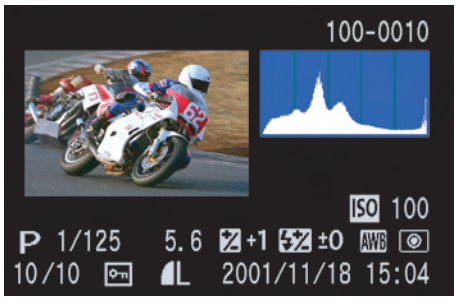


Fig. 2-15 Single-frame display Info.

5) Jump feature

It is the same as the EOS D30's.

1.10 Improved firmware

1) Shorter shutter-release time lag and better stability

The firmware has been revamped for the EOS D60. As a result, the shutter-release time lag is now shorter and more stable.

Regardless of the shutter speed, the shutter-release time lag (stop-down by up to 4.5 stops from maximum aperture and excluding AF operation time) will be as follows:

With SW-1 ON, the time between SW-2 ON and the start of exposure:
Approx. 100 ms.

The time from simultaneous SW-1 and SW-2 ON to the start of exposure:
Approx. 240 ms.

Also, the viewfinder blackout time is about 300 ms. This is about the same as film-based EOS cameras.

2) Shorter startup time from power off

With the EOS D30, each time the camera started up from power off (main switch off or auto power off), it accessed the recording media and read the occupied-area information. For the EOS D60, the firmware has been modified so that the recording media's occupied-area information remains in the camera's memory when the power is turned off. Therefore, there is no need to read the occupied-area information during startup. This makes the startup time shorter.

Since the CF card is a semiconductor integrated circuit, there is little startup time difference compared with the EOS D30. However, with a MicroDrive storage device, there is a big difference in the startup time.

When the power is turned off, the camera still detects whether the CF card slot cover has been opened or closed. If the slot cover has been opened or closed, the occupied-area information will be read during startup as with the EOS D30.

Camera	MicroDrive 1GB (Approx. 50% used)
EOS D60	Approx. 2.2 sec.
EOS D30	Approx. 3.5 sec.

Comparison of Startup Time

1.11 Internal construction

1) Internal construction

It is based on the EOS D30. The chassis is made of stainless steel and engineering plastic. The external cover's inner side has a high-frequency, ion plating finish for better protection against electromagnetic fields, static charge, etc.

Fig. 2-15 shows a cross-section diagram. Fig. 2-16 shows the location of the major mechanical components, and Fig. 2-17 shows the location of the major circuit boards.

2) Parts count

The EOS D60's parts count is shown below.

Optics	43
Mechanical parts	334
Electrical parts	719
Circuit boards	26
Lead wires	34
Screws and washers	157
Total	1313
Official total	1156

- The shutter unit is counted as 1 part.
- The DC/DC converter is counted as 1 part.
- When there are multiple units of the same part, they are all individually counted.
- The official total excludes the screws and washers.

Parts Count

3) Shutter-release mechanism

It is the same as the EOS D30's.

1.12 Custom Functions

The Custom Functions different from those of the EOS D30 are listed in the tables below.

The EOS D30's C.Fn-1 (noise reduction for long exposures) is not provided in the EOS D60 because, as mentioned in 1.1 3), the improved CMOS sensor has eliminated the need for noise reduction. The image quality is now better than the EOS D30's even without noise reduction. C.Fn-1 is left unused, and the camera does not display the C.Fn-1 number.

New Custom Functions

C.Fn No.	Custom Function	Setting	Description
C.Fn-14	Superimposed display	0	On
		1	Off
C.Fn-15	Shutter release w/o CF card	0	Possible without CF card
		1	Not possible

Modified Settings

C.Fn No.	Custom Function	Setting	Description
C.Fn-5	AF-assist beam/Flash firing	0	Emits/Fires
		1	Does not emit/Fires
		2	Only ext. flash emits/Fires
		3	Emits/Does not fire

* C.Fn-5: The flash firing can be set in addition to the AF-assist light setting .

1.13 Compatibility with accessories

Compatible with all EOS D30 accessories.

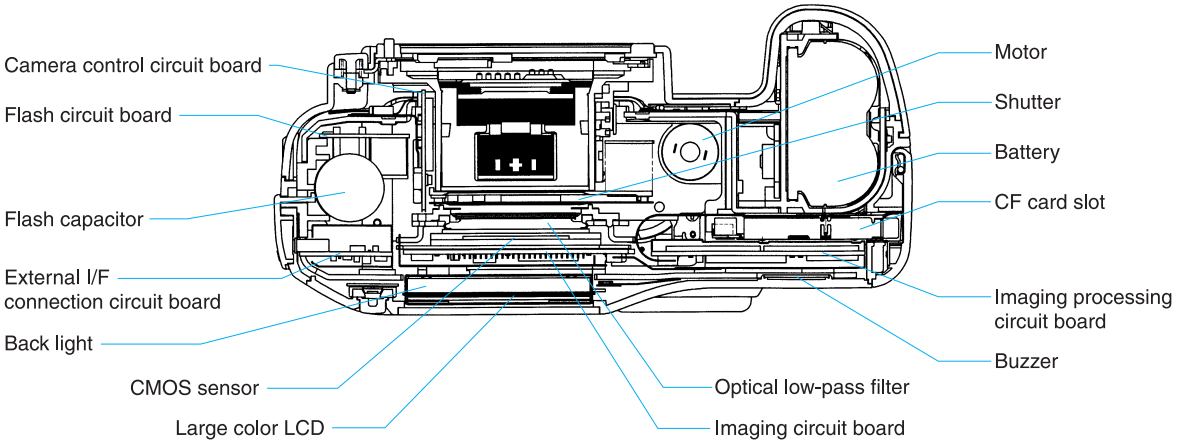


Fig. 2-16 Cross section at center.

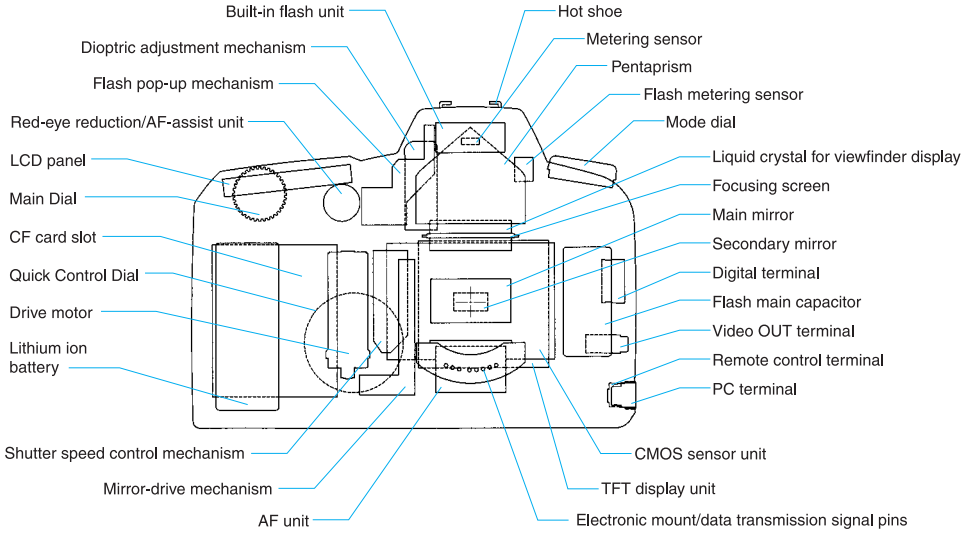


Fig. 2-17 Location of major mechanical components.

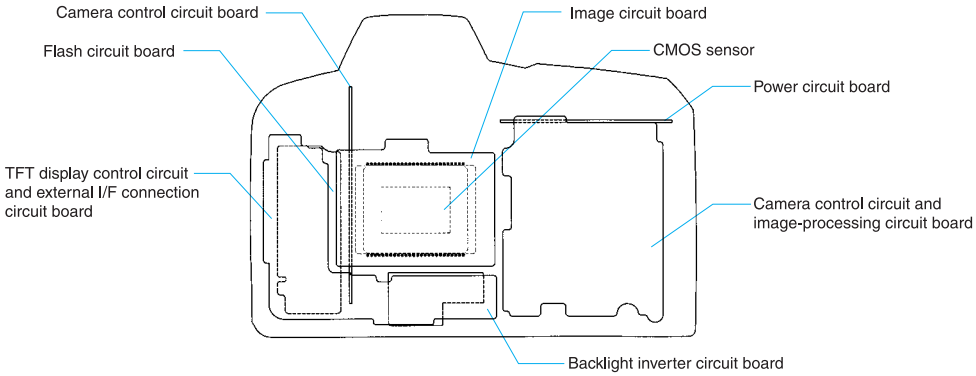


Fig. 2-18 Location of major circuit boards.

2. FUNCTION OF MAJOR CIRCUIT BOARDS

2.1 Description of Major Circuit Boards

EOS 60 is composed with four major circuit boards. The following are descriptions of the four major circuit boards.

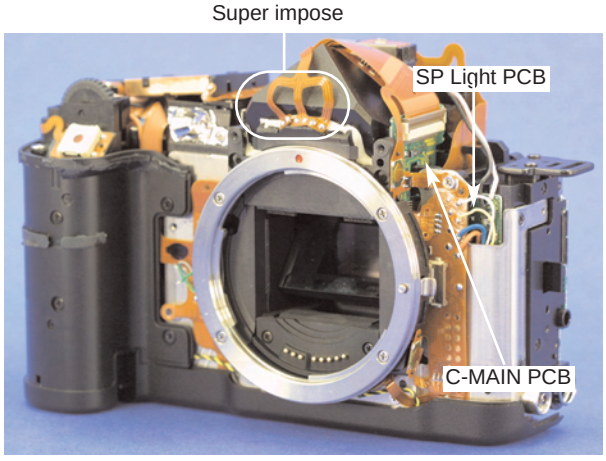


Fig. 2-19 Front Boards

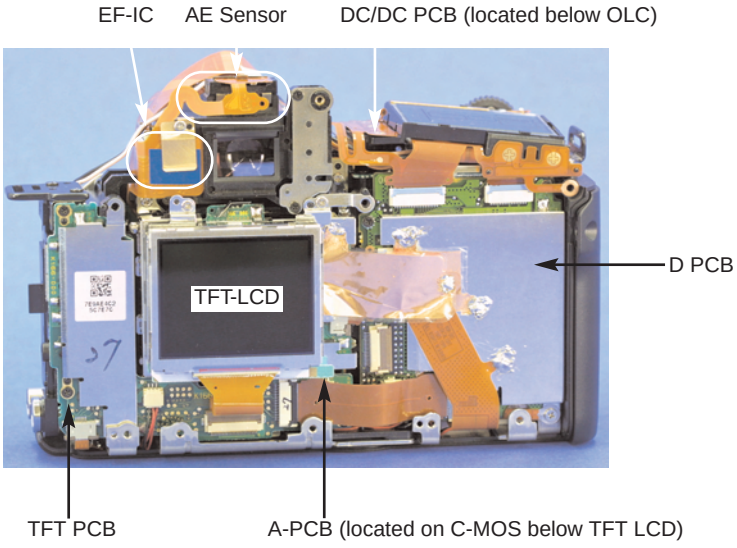


Fig. 2-20 Back Boards

1. D Board

This board process the signals of main section, and it includes the digital section's microcomputer which controls the entire sequence and performs the image processing.

Major Components	Function
IC3(CPU)	Reads all operation and status switches, and controls USB communication, video output, camera section's imaging and power source.
IC4(RTC)	Real-time clock
IC11	Flash memory (stores firmware)
IC12(DSP)	Graphic engine. After fixing the malfunction of the images such as C-MOS scratch data update and shading, processes and readouts to CF card.
IC14～17	Memory with a storage capacity of 128 Mbytes with the SDRAM and 256 Mbits × 4. Serves as a temporary storage for the data after image processing

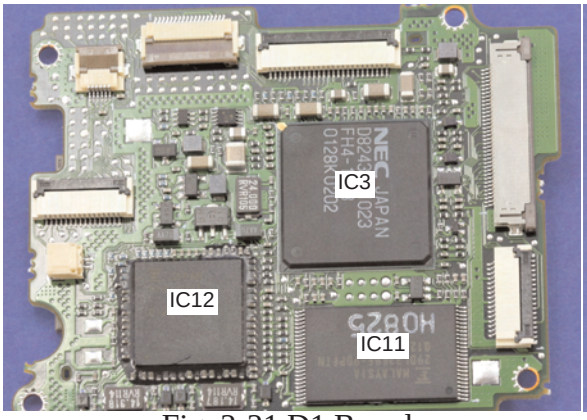


Fig. 2-21 D1 Board

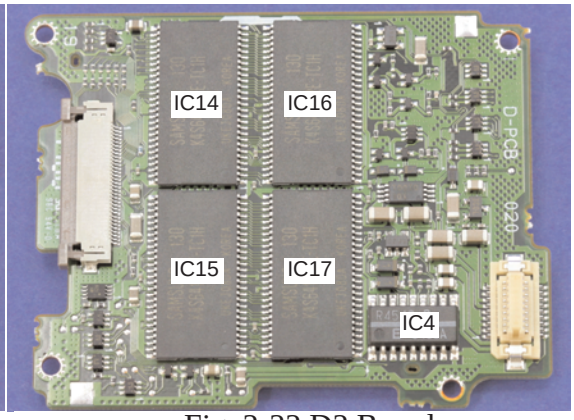


Fig. 2-22 D2 Board

2. A (analog) Board

Generates the CMOS-driving pulse and converts the C-MOS output from analog to digital.

Major Components	Function
IC5004(A/D converter)	Converts the analog signal to the 12 bit C-MOS signal.
IC5006(D/A converter)	Sets the C-MOS peripheral bias voltage.
IC5008(EEPROM)	Records the C-MOS initial information
IC5010(TG)	Sends driving pulse for C-MOS and does dark current processing.

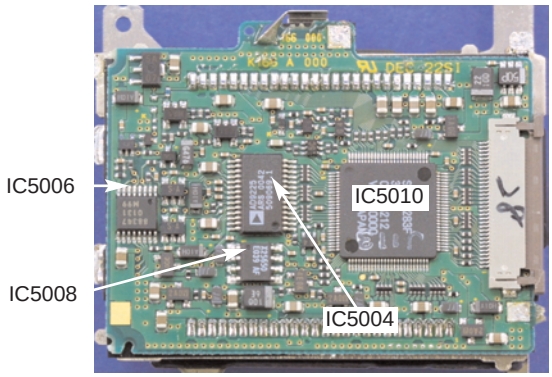


Fig. 2-23 A Board

3. TFT Board

The TFT board interfaces the display system with other systems.

Major Components	Function
IC7(LCD driver)	Controls TFT-LCD display.
IC15, IC6 (Video amp)	Video signal amp
Interface part	Cable release part and USB communication part.

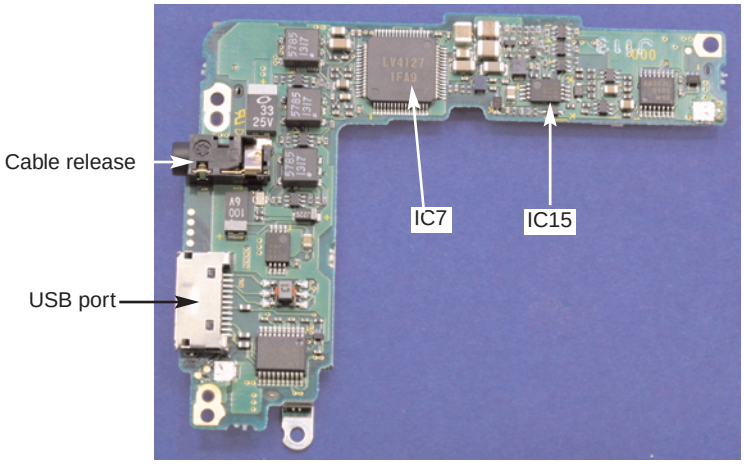


Fig. 2-24 TFT Borad

4. C-MAIN Board

Controls light metering,focusing, flash, and communicate with EF lens.

Major Components	Function
MPU	Camera microcomputer

3. SWITCHES AND THEIR FUNCTIONS

The following switches are found on the EOS D60.

(1) Operation Switches

No. Code	Name	Function
1 SW1	Focusing/metering	Starts autofocusing and metering.
2 SW2	Release	Starts the exposure.
3 MAIN SW	Main	When ON, turns on camera.
4 AEL SW	AE lock	When ON, AE lock applied. (AE lock also applied while metering is active.)
5 FPSEL SW	Focusing point selector	When ON, enables manual focusing point selection with the electronic dial. (Sub electrical dial can also be used.)
6 DRIVE MODE SW	Drive mode selector	ON+ electronic dial operation enables drive mode selection.
7 AF/WB SW	AF/WB selector	ON+ electronic dial operation enables AF mode selection. ON+ sub electronic dial operation enables WB mode selection.
8 MES SW	Metering mode selector	ON+ electronic dial operation enables metering mode selection. ON+ back cover Quick Control dial operation enables flash exposure compensation.
9 POP UP SW	POP UP	When ON, the flash pops up.
10 SPDN SW	Depth-of-field preview	When ON, metering starts and the diaphragm stops down at the set aperture value.
11 MENU	Menu button	When ON, the back cover Quick Control dial selects the tag.
12 INF0.	Info. button	When ON, enables checking the settings. When PLAY, displays the image infomation.
13 JUMP	Jump Button	When ON, jumps to next/former 10th frame.
14 MG SW	Enlarge button	ON+ the Quick Control dial enlarges the image.
18 PLAY SW	Play button	When ON, the image is displayed, Serial play with the sub electric dial operation.
19 ERASE	Erase button	Erases captured images. When ON, erase selection menu is displayed.
20 SET	Setting button	When ON, enables setting functions.

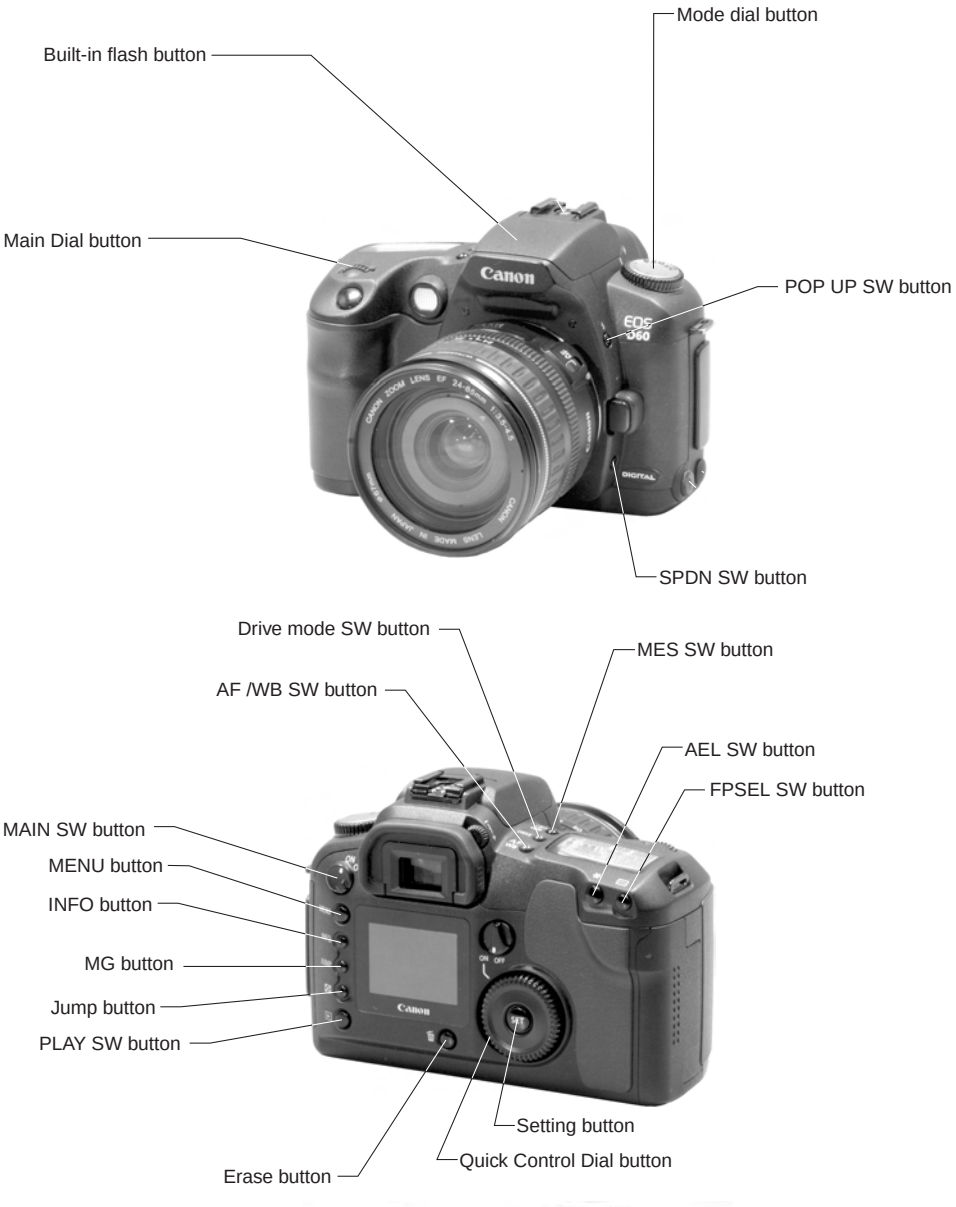


Fig. 2-25 Switch Names

(2) Status & Mechanical Switches

No. Code	Name	Function
1 MIF SW	Lens SW	Detects whether a lens is attached or not.
2 BATSEL SW	Battery detection SW	Detection switch for Lithium-ion battery
3 BAT SW	Battery cover detection SW	Open when a battery is installed, and battery cover open / close status is detected.
4 SWBIRI SW	Shock prevention SW	Prevents electrical shock.
5 CHG1,2 SW	Shutter-cocking phase SW	Detects shutter cocking, etc.
6 SWX SW	X SW	Flash synchronization detection
7 CN2 SW	2nd-curtain SW	Detects the end of the 2nd shutter curtain's movement.
8 CFCVR SW	CF card cover detection SW	Detects the opening/closing of the CF card cover.

Fig. 2-26 CF Cover

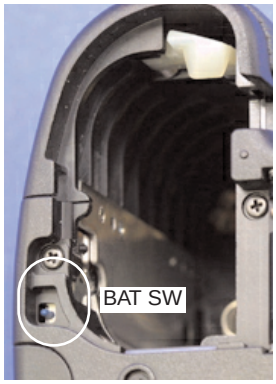


Fig. 2-27 Battery cover

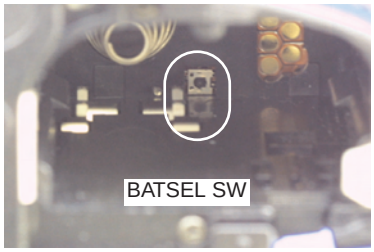


Fig. 2-28 Battery Chamber

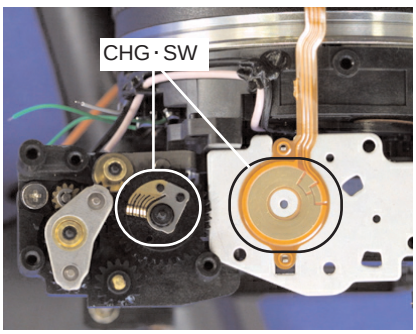


Fig. 2-29 CHG·SW

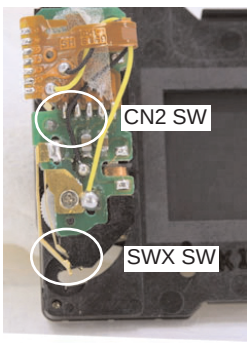


Fig. 2-30 Shutter lead wires

4. CIRCUIT OUTLINES

4.1 Power Supply Control

The power is supplied from the battery terminal and is input to the DC/DC PCB. The input power takes two signal paths. One power supply path is directly connected to the MD PCB where the input power is called VBAT. It is not fused. The other power path is connected to the DC/DC converter circuit through the fuse.

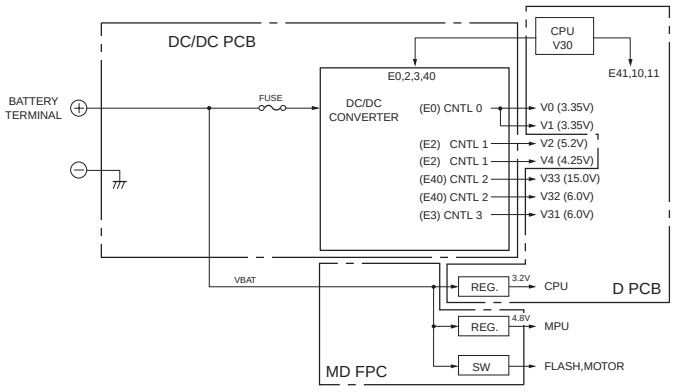


Fig. 2-31

4.1.1 Output Power from the DC/DC Converter

1) E0 (CNTL0) (Regulated)

The E0 (CNTL0) control signal is always turned ON while the main power is turned ON. This signal is temporarily ON when the lens is attached, the CF door is opened/closed and the CF is attached even if the main power is turned OFF.

- V0 (3.35 V): Power for the D PCB, TFT PCB circuit and A PCB TG
- V1 (3.35 V): Power for the CF card

2) E2 (CNTL1) (Regulated)

The E2 (CNTL1) control signal is turned ON while the camera is operating. This signal is temporarily ON when the lens is attached and the flash unit is popped up.

- V4 (4.25 V): Power for the camera (mechanism system)
- V2 (5.2 V): Power for the camera (microprocessor system)

3) E40 (CNTL2) (Regulated)

The E40 (CNTL2) control signal is ON when the TFT LCD is ON.

- V32 (6 V), V33 (15 V): Power supply for TFT PCB.

4) E3 (CNTL3) (Regulated)

The E3 (CNTL3) control signal is ON when driving the C MOS sensor.

- V31 (6.0 V): Power for the A PCB.

5) E10, E11: E41 (Regulated)

These E10, E11 control signals turn ON/OFF the output power of the DC/DC converter as described below.

- E41: This control signal turns ON/OFF the power supplied to the video output amplifier. The signal is turned ON when insertion of the video jack is detected by the video jack insertion detection.

4.1.2 VBAT Power

The following power supplies are generated from the VBAT power that is supplied from the battery terminal.

1) Power to the CPU
2) Power to the MPU
3) Power to the flash and motor circuits

4.2 Main System

The CPU (V30) on the D PCB is the main system control IC. It performs the controls such as receiving the operation switch data, power supply control, USB communication and OLC display and performs the following IC controls also.

- TG : Creation of the C MOS drive pulse • RTC: Clock count for clock
- LCD DRIVER: Driving the TFT LCD • FLASH: Firmware memory
- MPU (H12): Camera system control • DSP: Image processing

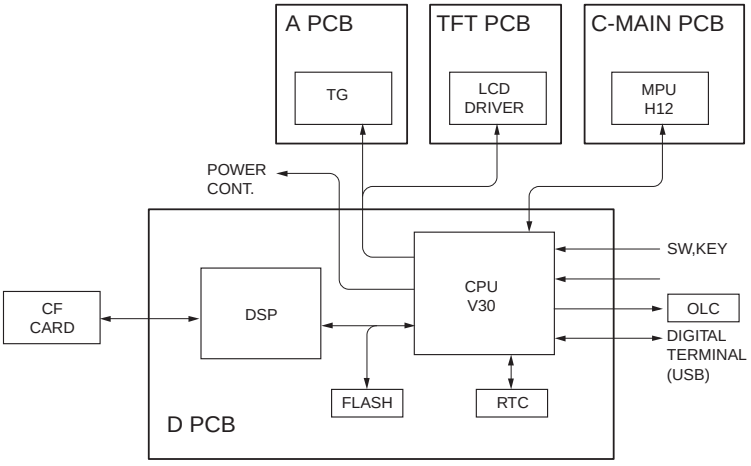


Fig. 2-32

4.3 Camera System

The MPU (HC12) on the C-MAIN PCB performs the following controls.

- AE/EF/AF sensor
- Shutter, AF auxiliary lamp
- Motor (for shutter, mirror and pop-up the flash)
- ILC (finder LCD) display
- EF lens
- Flash charging circuit

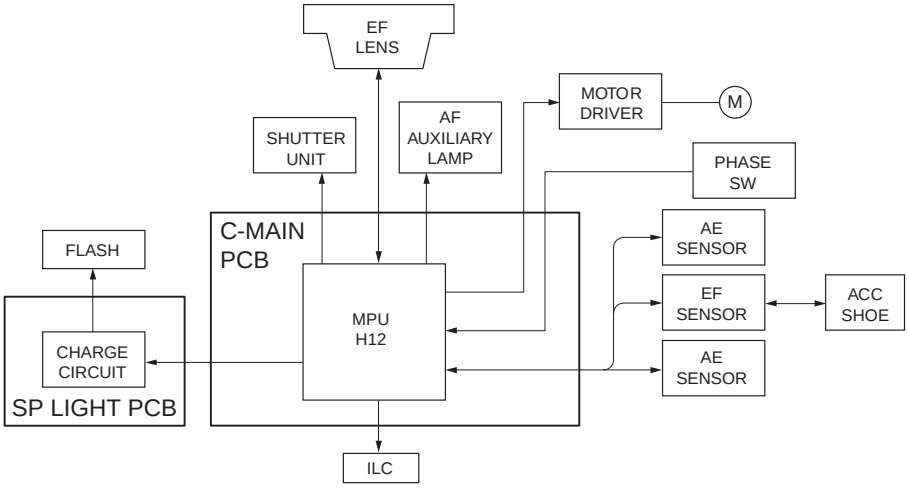


Fig. 2-33

4.4 Video Signal

1) A PCB

The C-MOS sensor drive pulses are generated by the TG circuit that is operated by the clock signal from the DSP and by the sync signal.

The video signal is output from the C MOS sensor when it is driven by the drive pulse. The output video signal from C MOS is converted to the digital data by the A/D converter, passes through the TG circuit and is sent to DSP of the D PCB.

2) D PCB

The DSP circuit performs the following signal processing.

- Processes the video data. (Using the SDRAM)
- Writes and reads the video data to and from the CF card.
- Outputs the video data to the CPU.
- Outputs analog video signal to the LCD and VIDEO OUT.

3) TFT PCB

The video signal that is supplied form the DSP is controlled by the LCD driver and is displayed on the LCD. The video amplifier is activated when a jack is inserted into the video jack and drives the 75 ohm video signal.

4) Selecting the ISO sensitivity

The C-MOS sensor gain is switched by changing the amplifier gain (supporting ISO100 to 400) on the A PCB and the DSP amplifier gain (supporting ISO800 to 1600).

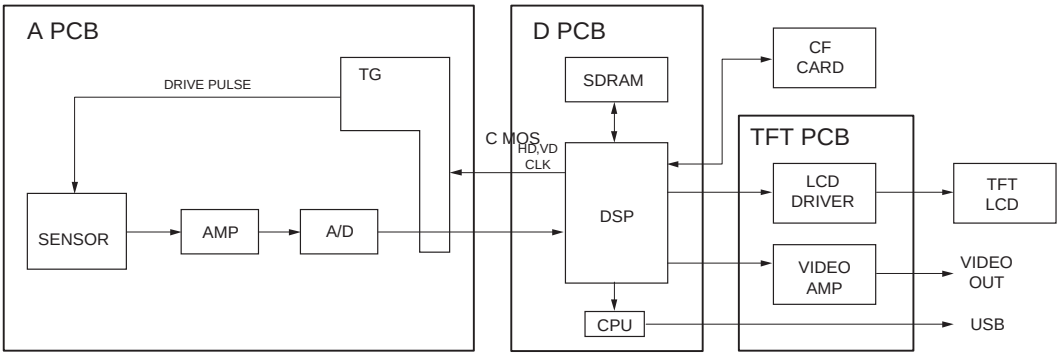


Fig. 2-34

5. ERROR CODE DISPLAY

As with other cameras, you can check the camera's condition in the inhibit mode. In the camera's inhibit mode, Err XXX is displayed. The user can see five types of error codes. Using the service adjustment software, you can check the detailed error codes and also erase error codes.

<User-viewable Errors>

Display XX	Description	Probable Cause and Countermeasures
01	Lens faulty	• Lens communication error at shutter release. • Lens diaphragm does not stop down at shutter release. • Lens detection SW does not change.
02	CF card faulty	• CF card connector pin faulty. • CF card faulty.
04	Folder limit / CF card has inadequate storage space.	• The number of folders created exceeded the limit. Delete unnecessary folders.
05	Flash pop up error	• Pop-up switch error
99	Other defects	• Faulty system, DC/DC fuse blown.

<Detailed Error Codes> (Viewable with the adjustment software.)

Error code		Contents	The part that is suspected as the cause of the error	OLC
1	2			
10000000	00000000	Lens aperture blades does not operate	Lens	99
01000000	00000000	Lens aperture blades is not set in the full open state	Lens	
00100000	00000000	Lens communication error	Lens	
00010000	00000000	Mirror up cannot be implemented	Mirror box unit	
00001000	00000000	Mirror down cannot be implemented	Mirror box unit	
00000100	00000000	Shutter charge cannot be implemented after mirror is raised up	Mirror box unit	
00000010	00000000	Rear screen switch is not turned off after release	Shutter unit	
00000001	00000000	Completion of charging is not output after the pre-illumination	Shutter unit	
00000000	01000000	X-contact does not turn on	Shutter unit	
00000000	00010000	X-contact is turned on at mirror up	Shutter unit	
00000000	00001000	Flash cannot be popped up	Top cover unit	
00000000	00000100	* CGE is open during standby	Mirror box unit	
00000000	00000010	* Mirror up is short-circuited at standby	Mirror box unit	
00000000	00000001	* CN2 is open at standby	Shutter unit	

* When any digit other than the specified digit goes "1", the specific trouble may be caused by the other error.
In such a case, clear the error once and check the operation again in order to specify the error.

Part 3

Repair Information

1. PREPARATION FOR REPAIR

Be sure to read the following before starting the repair work

1.1 Flash High Voltage Circuit Precaution

- As soon as the front cover is removed, be sure to bleed the main capacitor. (Bleeder resistor: 500 ohms, approx. 10 W.)
- The bleeding contacts are the XE (+) side and GND onthe STR PCB. Contact the bleeder resistor with GND first, then with the XE (+) side.

CAUTION HIGH VOLTAGE! Be careful of electric shock !

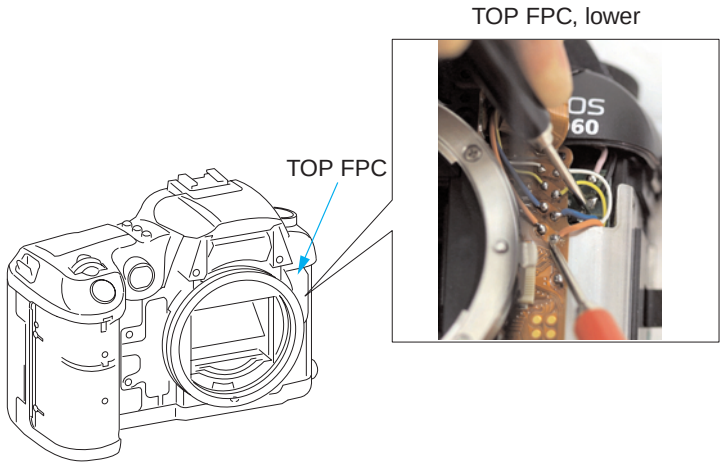


Fig. 3-1 Flash Capacitor Bleeding Points

1.2 Power Consumption

Power Consumption Standard
Lens : EF 50mm f/1.8
Power Supply : Regulated Power Supply:7.5V, 0.4Ω
Ambient conditions: Room temperature, normal humidity (below 60%)

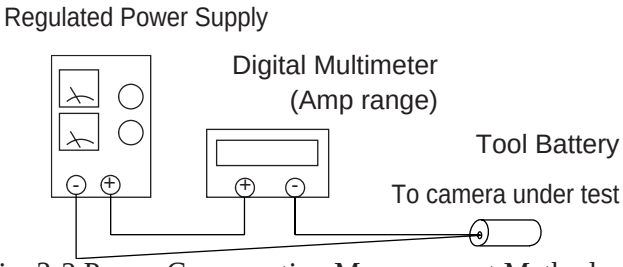


Fig. 3-2 Power Consumption Measurement Method

Camera Setting	Product Standard	Actual Measured Value*
Stand-by	Less than 150μA	Approx.45μA
SW-1 On	Less than 300mA	Approx.280mA

* : Values measured from early production cameras. Values may vary somewhat with later lots.

1.3 Tools and Expendables List

The following tools, test equipment and expendables are necessary during repair. Have them on hand.

1) Tools and Test Equipment

New	Name	Part No.	Areas where used
	EF-8000 Multi-camera Tester	CY9-7073-000	Light Source ("A" Light Source)
	EF-5000	CY9-7086-000	Light Source ("A" Light Source)
	Color Viewer (5600K)	DY9-2039-100	Electrical Adjustments
	Color Bar Chart	DY9-2002-000	Electrical Adjustments (Color Adjustment)
	Regulated DC Power Supply		Electrical Adjustments
	Mount Fastening Tool	CY9-1547-000	FFD adjustment
	Digital Micrometer	Local Purchase	FFD Adjustment
	AF Standard Tool Lens	CY9-1072-001	AF Accuracy Adjustment
	Video Light	Local Purchase	AF Focus Adjustment, etc.
	Flash meter	Local Purchase	Flash Exposure Adjustment
	Penlight	Local Purchase	SPC Positioning
	Tripod	Local Purchase	
	Dark Bag	Local Purchase	
	Multimeter	Local Purchase	
	AF Standard Chart	CY9-1124-000	AF Adjustment
	C12 Filter (2 each)	CY9-1546-000	White Balance Adjustment
	Luminance Meter BM-300	NPN	Light Source Calibration
	Luminance Meter BM-3000	CY9-7052-000	Light Source Calibration

2) Charts and Locally Fabricated Tools

New	Name	Part No.	Areas where used
	18% Gray Standard Panel		Flash Exposure Adjustment
	3D chart		See EF 300mm f/4.0L IS Service Manual
	SPC Positioning Mask	Local Fabrication	As necessary
	X-sync Time-lag Tool	Local Fabrication	X-sync time lag
	Tool Battery	Local Fabrication	Inhibit Voltage adjustment

* : Refer to Locally Fabricated Tools for details.

3) Products necessary for Testing

New	Name	Part No.	Areas where used
	EF 50mm f/1.8 Lens		Various Operational Checks and Adjustments
	EF Speedlite (A-TTL type) 300EZ, 540EZ		Flash Exposure Adjustment
	EF Speedlite (E-TTL type) 380EX, 550EX		Flash Exposure Adjustment

4) Expendables List

New	Name	Part No.	Areas where used
	Light-shield Tape	CY9-4026-000	Motor
	Scotch tape	CY9-4031-000	Pentaprism assembly
	Double-sided tape	CY9-4034-000	Fixing lens mount contact ass'y leads
	Aron-Alpha 201	CY9-8007-000	Fixing the SPD and SI
	Arontite L	CY9-8008-000	Staking screw heads
	Three bond 1401C	CY9-8011-000	Staking screws
	UTLM-10	CY9-8031-000	Mirror Mechanism
	Silicon KE347B	CY9-8064-000	Protecting high voltage and other cables
	Grease H-26	CY9-8079-000	Dial Unit, etc.
	IF10	CY9-8088-000	Mount spring
	Barrierta SJF-102 Grease	CY9-8100-000	Release contacts
	Oil Retardent	CY9-8101-001	Prevent oil smear around mount
	Logenest Lambda A-74	CY1-8102-000	M2 gear shafts
	Dia-bond 1663G	CY9-8129-000	Attaching parts together
	Logenest Lambda NK-74C	CY1-8117-000	Shafts, other friction surfaces
	Cemidine Super XNo8008	CY9-8118-000	Fixing Mount Ring, etc.
	NoxGuard ST-420	CY9-8123-000	Parts assembly
	Logenest Lambda NFH-743C	CY1-8125-000	Front Panel friction surfaces
	PL015JG	CY9-8073-000	Sliding part of back cover dial

1.4 Locally Fabricated Tools

1) SPD Positioning Mask

Open holes in flat black paper as shown

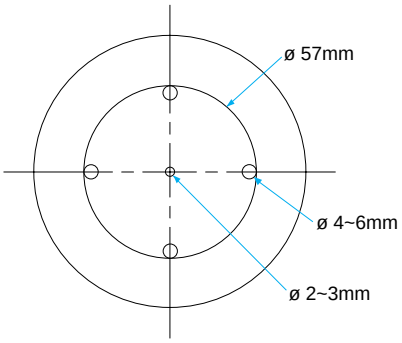


Fig. 3-3 SPD Positioning Mask

2) X-sync Time-lag Tool

Assemble a 4.7kΩ resistor from CCC to GND.

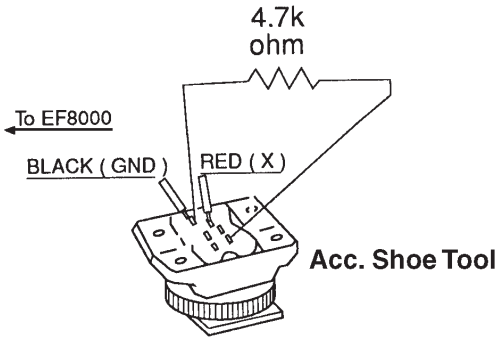


Fig. 3-4 X-sync Time-lag Tool

1.5 Body Serial Number Position

This is a serial number for after-service information.

Products for sale start from No. 0110100001.

X X X X X X X X X X

- Serial No. (00001~99999)
- Classification No. (01~99)
- Type of model (1. NTSC (DOM), 2. NTSC (USA, CAN), 3. PAL)
- Date of production (2002, JAN.=00~2003, oct.=21)

1.6 Flexible Connectors

The product uses three kinds of the locking connector.

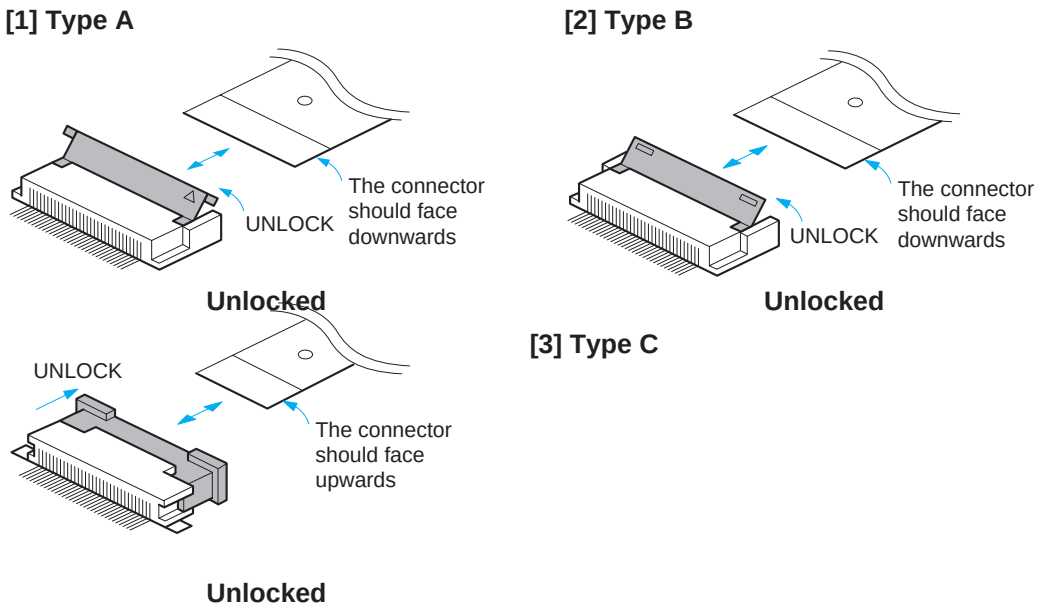


Fig. 3-5 Flexible connectors

CAUTION

1. Before inserting or removing the flexible cable, be sure to unlock the connector. After insertion, be sure to lock it.
2. The Type B has a two-stage connection structure. Insert it to the deep end to avoid short-circuiting the terminals. Insert it so that the clearance between the cut-out of the flexible cable reinforcement plate and the connector is about 0.3 mm.
3. The flexible cable has holes for insertion and removal. Use them for removal and insertion by inserting the tweezers into the holes as required. (Fig. 3-7)

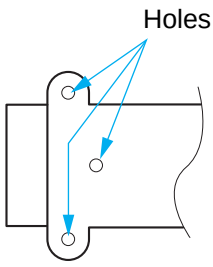


Fig. 3-6 Holes for removal
Flex holes

2. DISASSEMBLY/ASSEMBLY

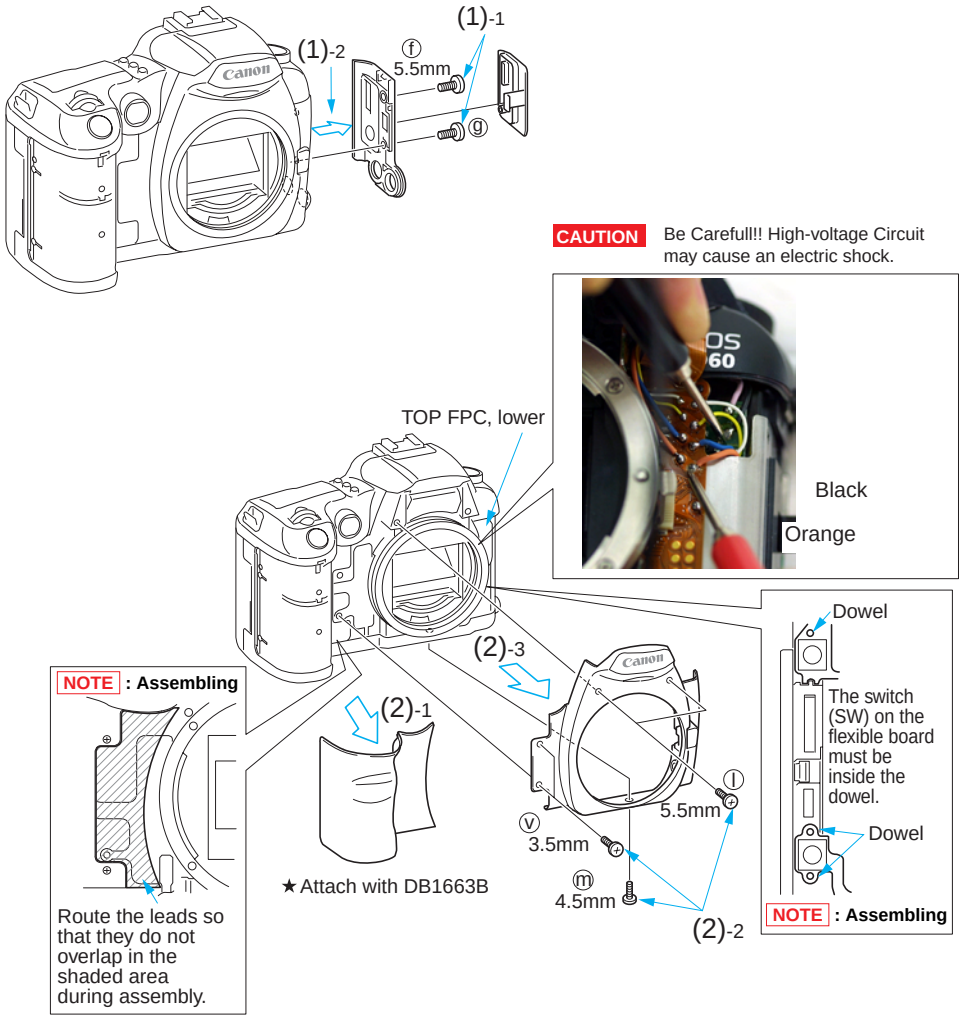


Fig. 3-7 Terminal cover and front cover

CAUTION Discharging the main capacitor.
When the front cover is removed, be sure to discharge the main capacitor before proceeding to the next step.

2.1 Terminal Cover and Front Cover

(1) Terminal cover
1. Remove two screws.
2. Open and pull the extension terminal cover, then remove it together with the terminal cover.

(2) Front cover
1. Remove the grip rubber.
2. Remove five screws.
3. Remove the front cover.

NOTE : Assembling
When attaching the front cover, confirm that the cables and other wires are not pinched.

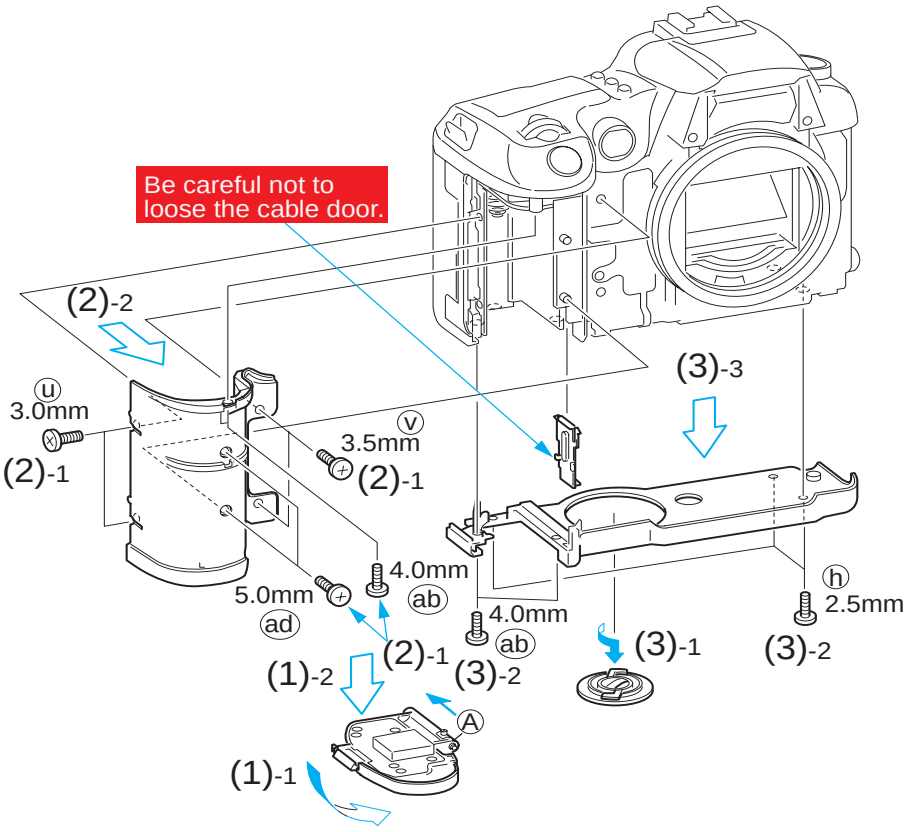


Fig. 3-8 Main battery cover, grip and bottom cover

2.2 Main Battery Cover, Grip and Bottom Cover

(1) Main battery cover
1. Open the main battery cover.
2. Slide portion A of the hinge in the direction of the arrow and remove the main battery cover.

(2) Grip
1. Remove seven screws.
2. Remove the grip.

(3) Bottom cover
1. Rotate the date battery lid counterclockwise to remove it.
2. Remove five screws.
3. Remove the bottom cover.

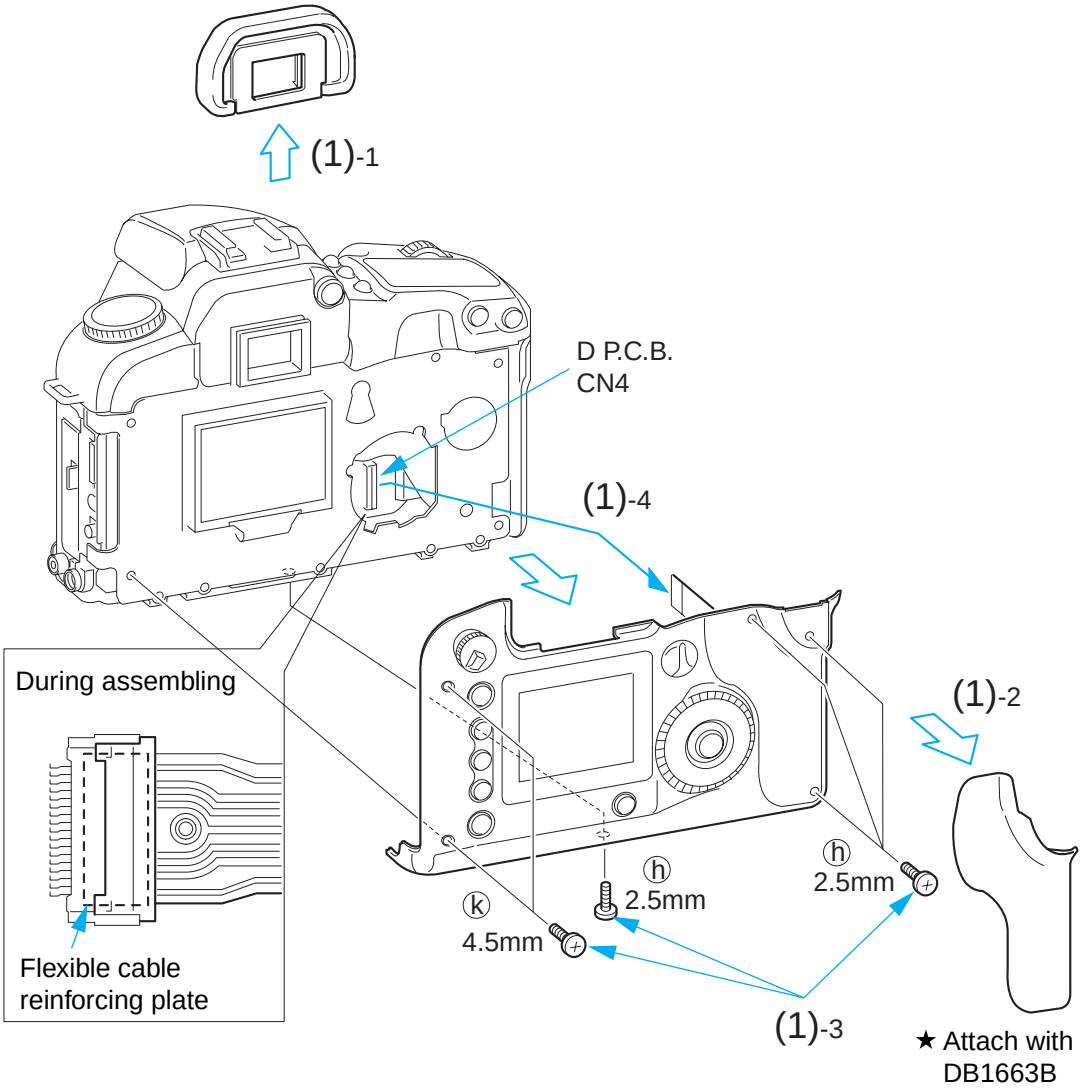


Fig. 3-9 Rear cover

2.3 Rear Cover

(1) Rear cover

1. Remove the eye-cup.
2. Remove the back rubber.
3. Remove six screws.
4. Lift the rear cover from the main unit and remove the flexible cable from CN4 on the D PCB.

NOTE : Assembling CN4

Insert the flexible cable until the flexible cable reinforcing plate is completely covered by the connector when the connector is locked. Then lock the connector.

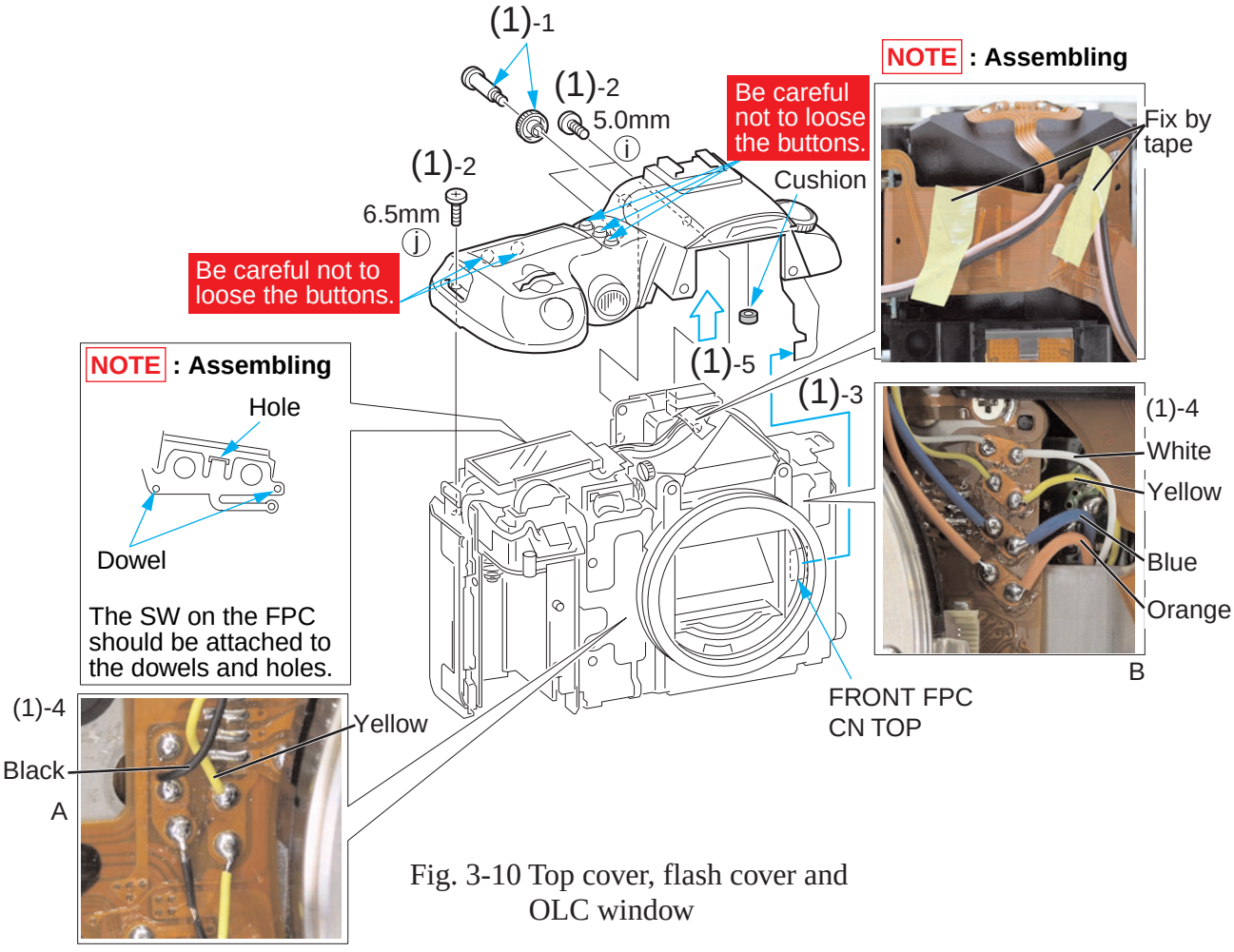


Fig. 3-10 Top cover, flash cover and OLC window

2.4 Top Cover, Flash Cover and OLC Window

(1) Top cover

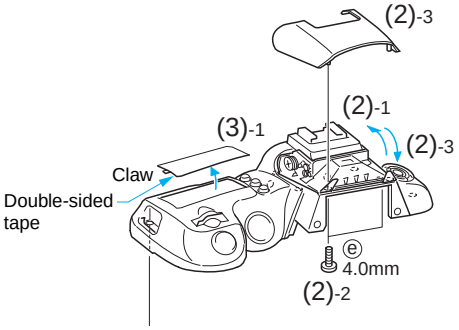
1. Remove the screw and remove the diopter adjustment knob.
2. Remove three screws.
3. Remove the flexible cable from the FRONT FPC CN TOP.
4. Remove the six lead wires on portions A and B.
5. Remove the top cover while being careful not to loose the operation buttons.

(2) Flash cover

1. Raise the flash unit.
2. Remove two screws.
3. Press down the flash unit and remove the flash cover.

(3) OLC window

Push the flash side of the OLC window from the bottom of the top cover to remove it.



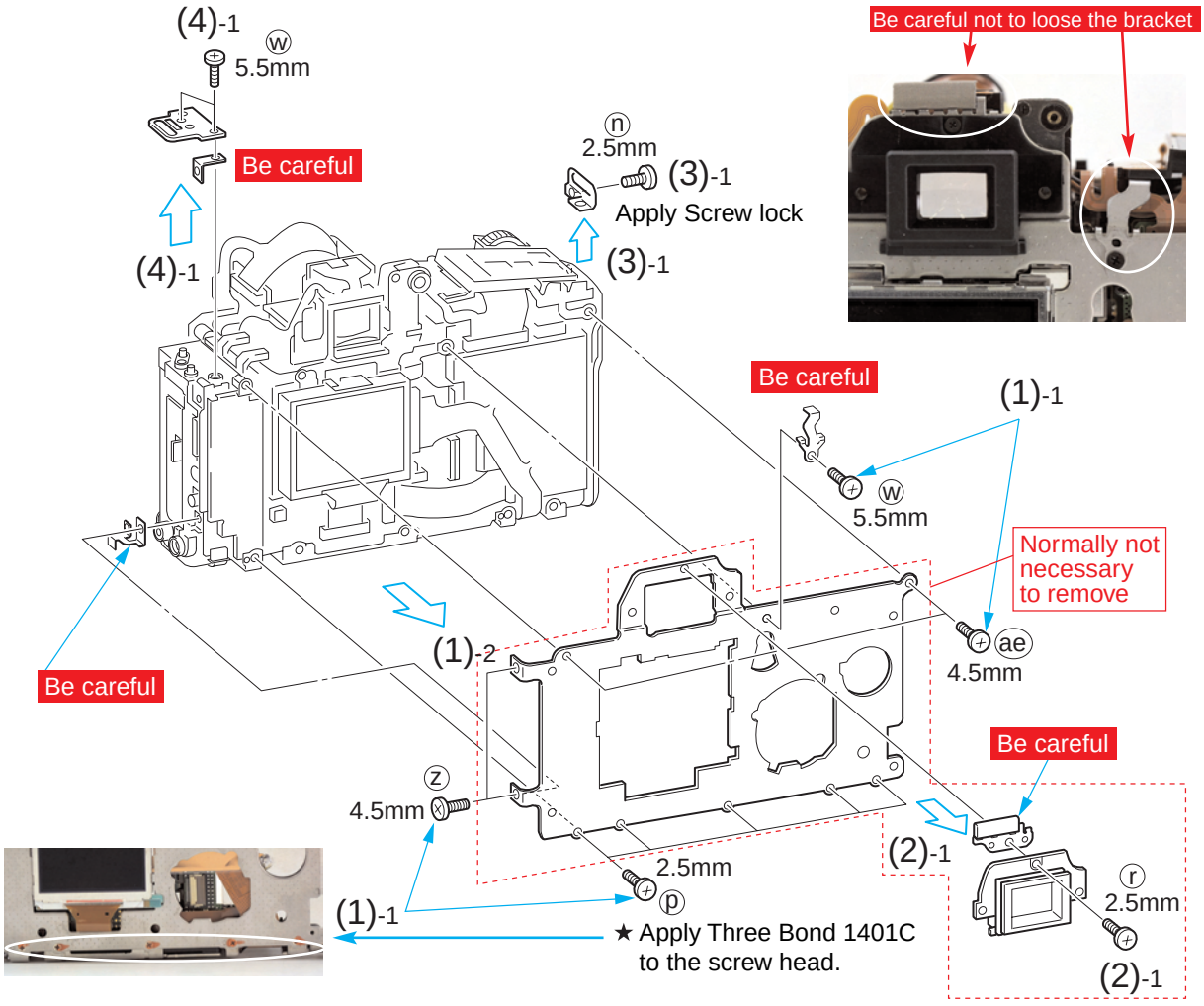


Fig. 3-11 Rear frame, eyepiece cover and strap holder

2.5 Rear Frame, Eyepiece Cover and Strap Holder

(1) Rear frame
1. Remove ten screws.
2. Remove the rear frame.

(2) Eyepiece cover
1. Remove the screw and eyepiece cover.

(3) Strap holder (right)
1. Remove the screw and remove the strap holder (right).

(4) Strap holder (left)
1. Remove two screws and remove the strap holder (left).

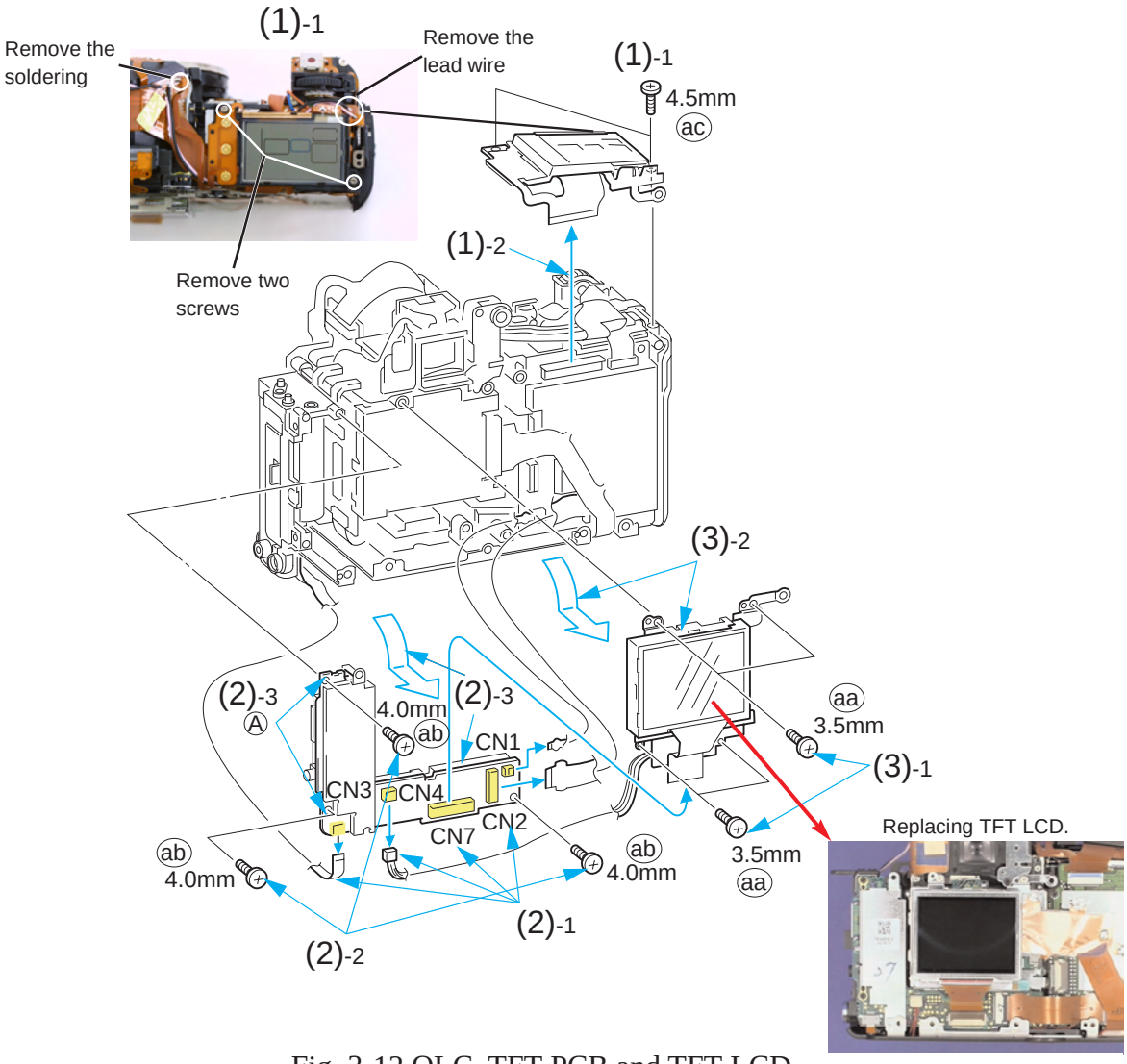


Fig. 3-12 OLC, TFT PCB and TFT LCD

2.6 OLC, TFT PCB and TFT LCD

(1) OLC unit
1. Remove two lead wires for EL.
2. Remove two screws.
3. Remove the OLC unit from CN3 on D PCB.

(2) TFT PCB
1. Remove the flexible cable and cables from the connectors CN2, 1, 3, 4 and 7 on the TFT PCB.
2. Remove three screws.
3. While removing the two dowels "A", pull up the TFT PCB from the above to remove it.

(3) TFT LCD unit
1. Remove four screws.
2. Remove the TFT LCD, lifting it from its top.

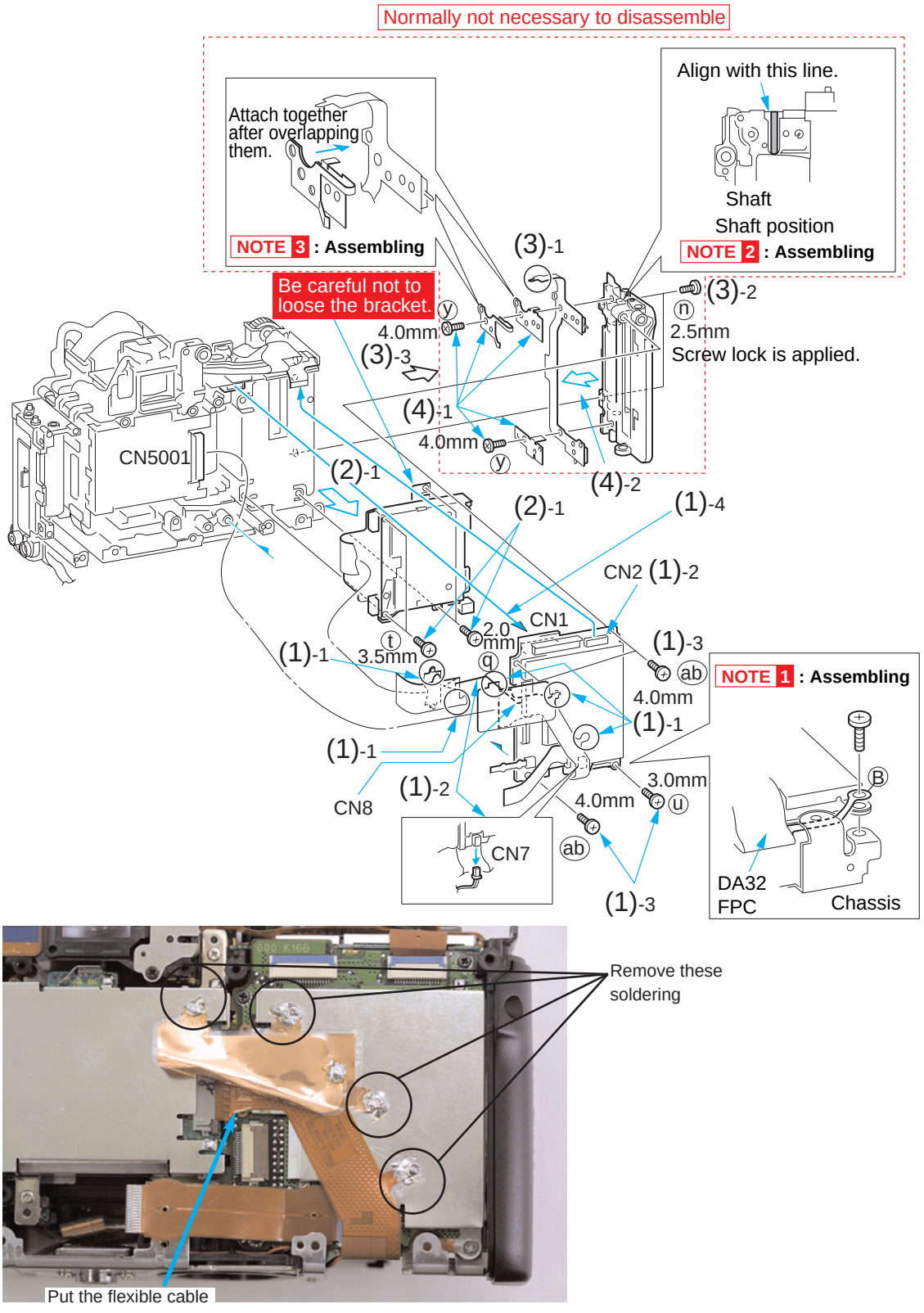


Fig. 3-13 D PCB, CF FPC and right cover

2.7 D PCB, CF FPC and Right Cover

(1) D PCB

1. Remove the soldering from the flexible connector and shield plate.
2. Remove the flexible board from the connectors CN5001 on the A PCB and the connectors CN2, 7 and 8 on the D PCB.
3. Remove four screws.
4. Remove the connector CN1 (B to B) and remove the D PCB.

NOTE 1 : Assembling

1. The connector "B" of DA32 FPC must be inserted between the screw and the D PCB.

(2) CF FPC unit

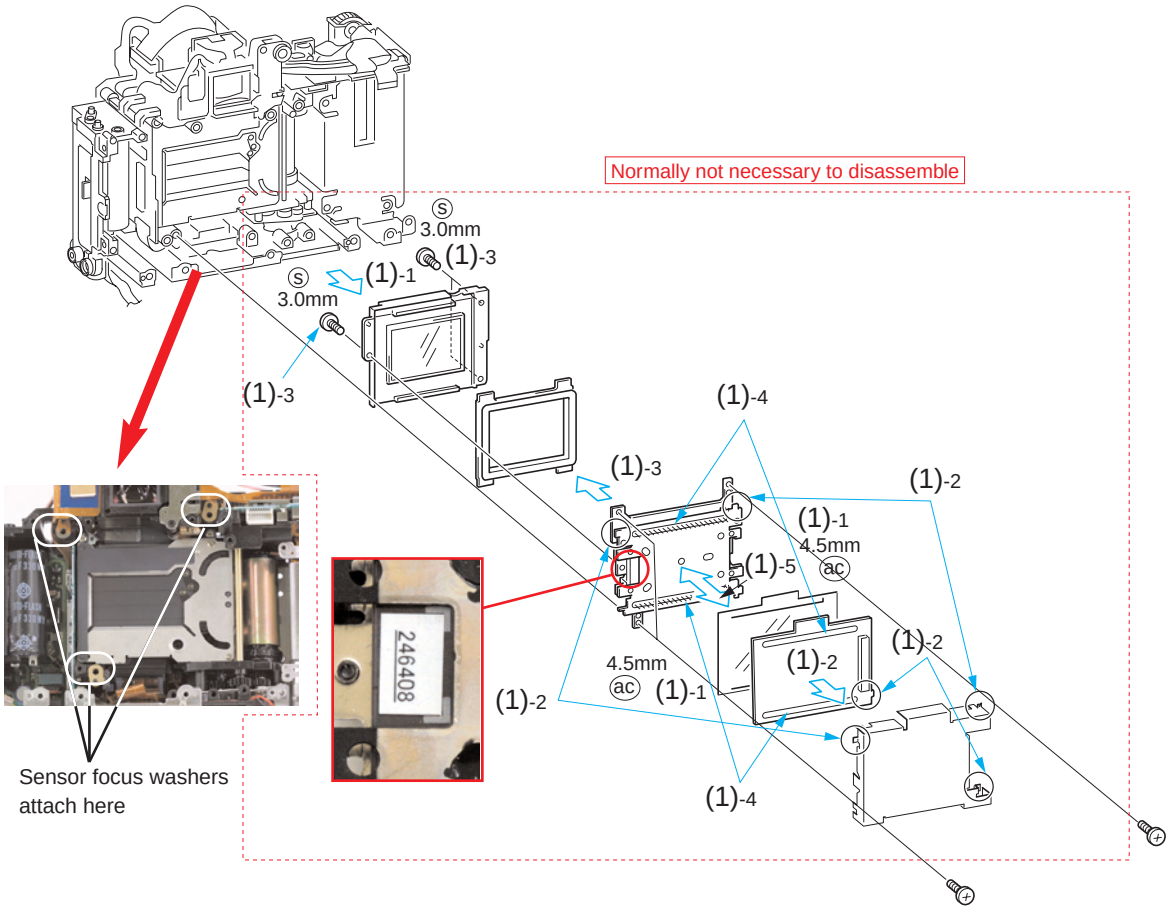
1. Remove four screws and remove the CF FPC unit.

(3) Right cover

1. Unsolder three points on the flexible connector.
2. Remove two screws.
3. Remove the right cover.

NOTE 2,3 : Assembling

3. Align the position of the shaft of the CF cover with the line and attach the CF cover from the lower flexible connector retainer. Then, fasten the screw.
4. Overlap the two upper flexible connectors, then attach them.



CAUTION

The CMOS sensor is fragile and can be easily damaged by the static electricity. Therefore, when handling the CMOS sensor, use the antistatic strap, or other static electricity protective devices

Fig. 3-14 CMOS sensor and A PCB

2.8 CMOS Sensor and A PCB

(1) CMOS sensor

1. Remove three screws and remove the CMOS sensor unit.

(2) Disassemble CMOS sensor and A PCB

1. Unsolder at three points and remove the shield case.
2. Remove three screws, then remove the LPF and LPF rubbers.
3. Unsolder the foot of the CMOS sensor from the A PCB.
4. Separate the A PCB from the CMOS sensor.

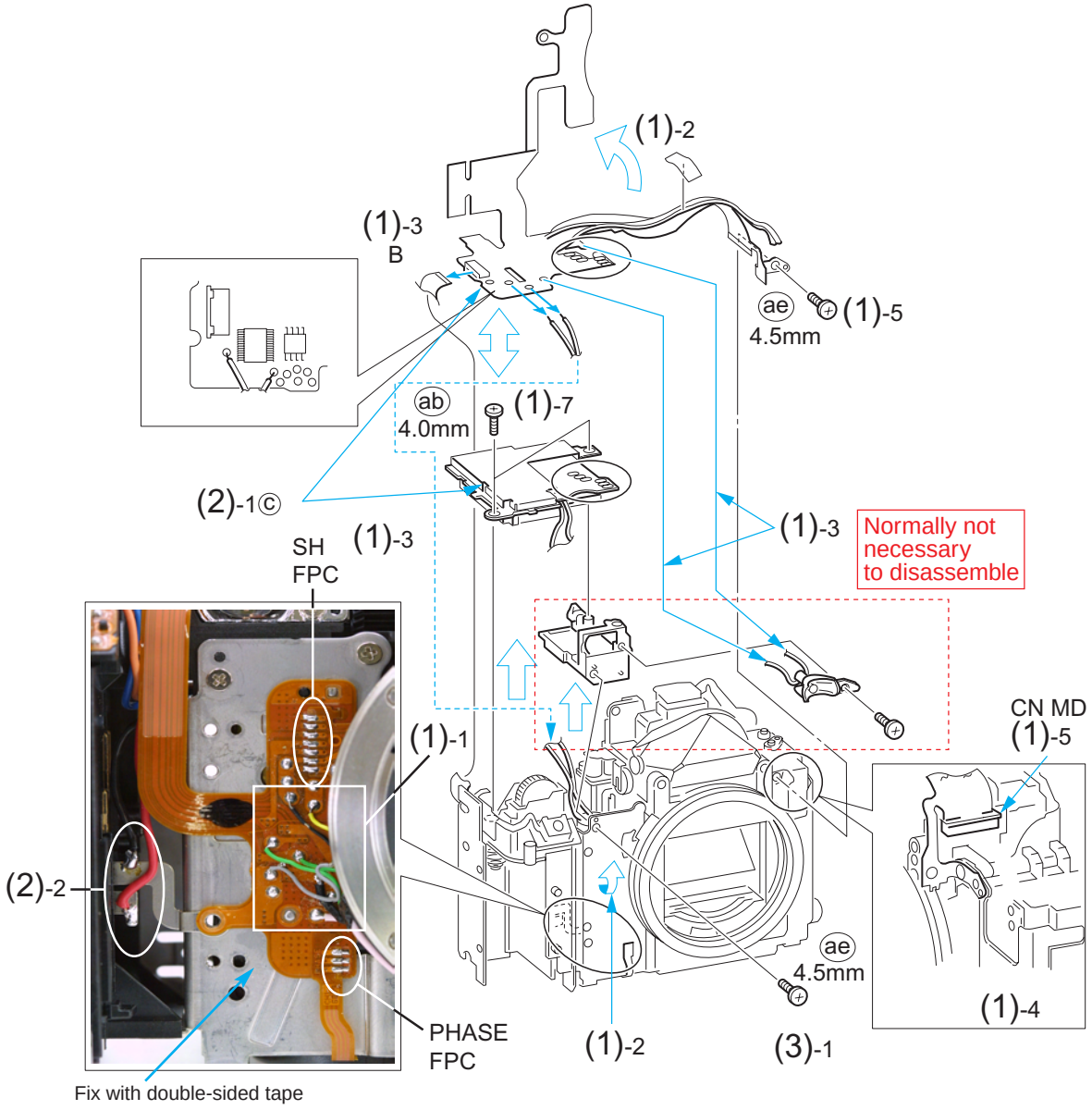
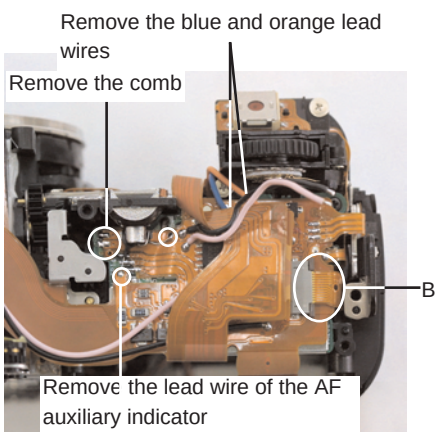
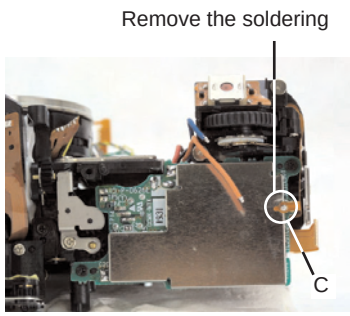
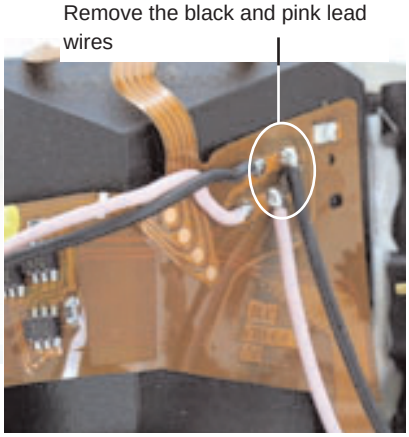


Fig. 3-15 DC/DC PCB, MD FPC, AF auxiliary indicator







2.9 DC/DC PCB, MD FPC, AF Auxiliary Indicator part

(1)Remove MD FPC

1. Unsolder the seven lead wires near the lens mount on the MD FPC and the SH FPC and PHASE FPC connectors.
2. Peel off the MD FPC beside the lens mount from the chassis (fixed with double-sided tape) and open the unit so that the top of the MD FPC becomes visible.
3. Remove the four lead wires(the motor and the lead wire of AF auxiliary indicator part), from MD FPC and also remove the comb of the portion "A".
4. Unsolder the two lead wires from the ILC FPC.
5. Remove the flexible boards from the CN MD of the C-MAIN PCB, remove the screw.
6. Remove the MD FPC.

(2) Remove DC/DC PCB

1. Remove the soldering from the portion "C".
2. Unsolder the two lead wires from the battery terminal.
3. Remove two screws from DC/DC PCB and remove DC/DC PCB.

(3) AF auxiliary indicator part

1. Remove the screw and AF auxiliary indicator part.

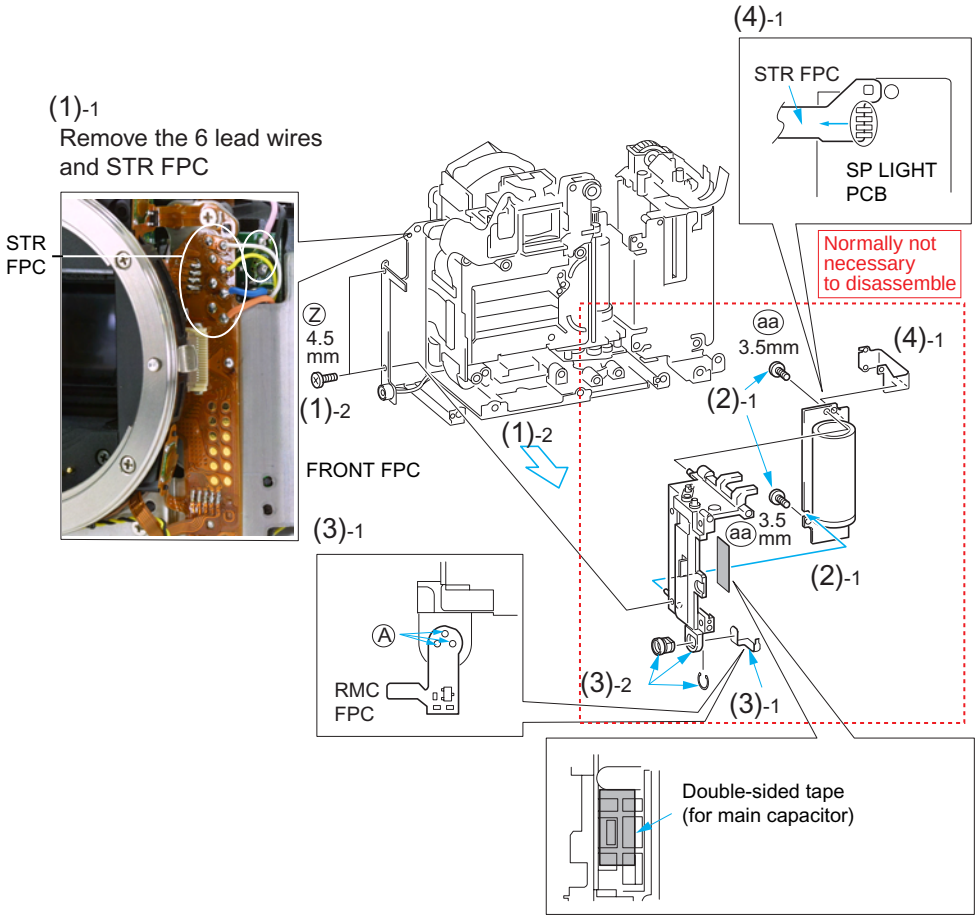


Fig. 3-16 Left body unit

2.10 Left Body Unit

(1) Left Body Unit
1. Remove the four lead wires from the front FPC, the two wires from STR PCB and unsolder the comb of STR FPC.
2. Remove two screws and remove the left body unit.

(2) SP LIGHT PCB
1. Remove two screws and remove the SP LIGHT PCB. (Be careful, the capacitor is fixed with double-sided tape.)

(3) RMC terminal/FPC, left body
1. Unsolder at A and remove the RMC FPC.
2. Remove the stopper and separate the RMC terminal from the left body.

(4) STR FPC
1. Remove the STR FPC connector from the SP LIGHT PCB.

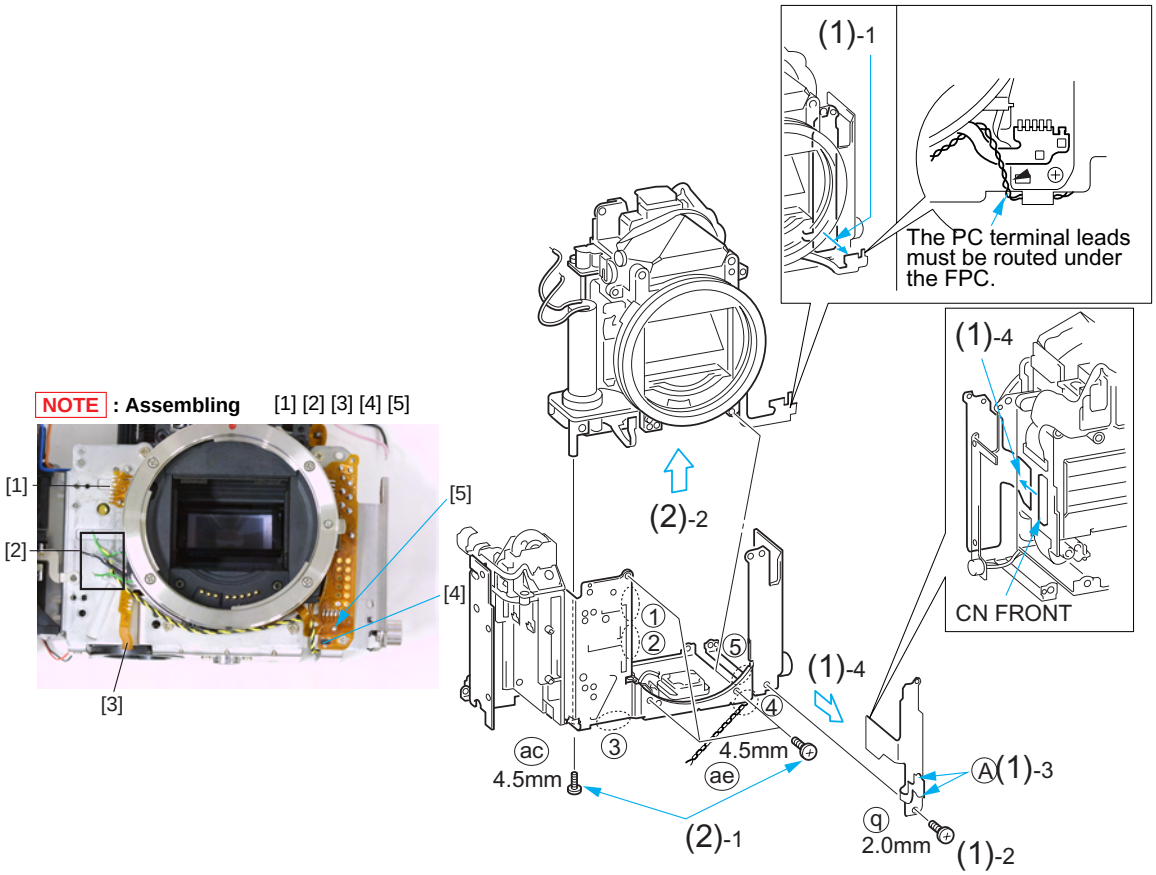


Fig. 3-17 FRONT FPC and front panel unit

2.11 FRONT FPC and Front Panel Unit

(1) FRONT FPC

1. Remove the comb of the MIF FPC from the FRONT FPC.
2. Remove the screw.
3. Remove the FRONT FPC at "A" from the dowel of the front panel unit.
4. Release the lock of connector CN FRONT on the C-MAIN PCB and remove the FRONT FPC toward the front.

(2) Front Panel Unit

1. Remove five screws.
2. Remove the front panel unit upwards while taking care that it does not catch on the flexible connector.

NOTE : Assembling

Before starting to install the front panel unit, be sure to pull these lead wires of the front panel unit to the front through the clearance with the FRONT body.

[1] SH FPC
[2] Lead wires of the front panel unit (5 pcs.)
[3] PHASE FPC
[4] Synchro terminal lead wires (2 pcs.)
[5] MIF FPC

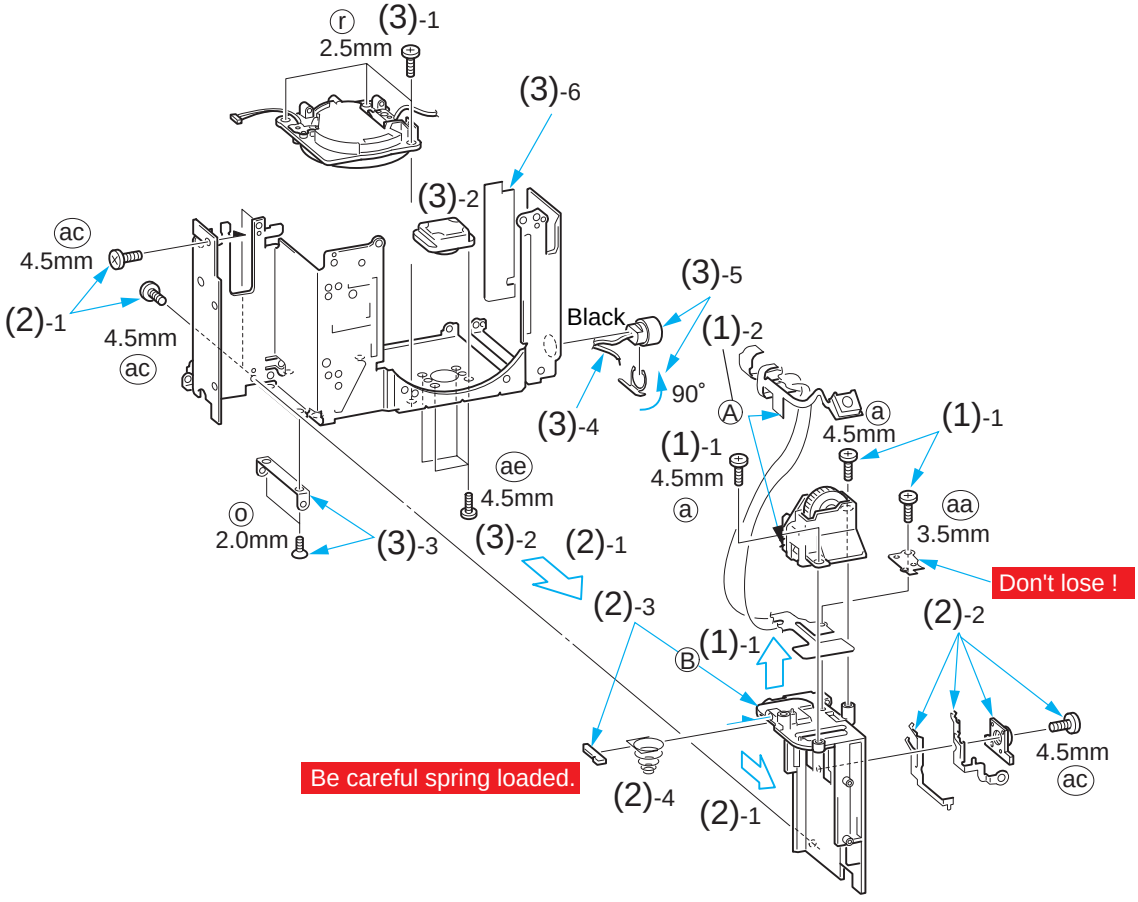


Fig. 3-18 Front body

2.12 Front Body

(1) Main dial

1. Remove three screws, and remove the main dial and the RELEASE FPC.
2. Unsolder at "A" and separate the main dial from the RELEASE FPC.

(2) Main battery case

1. Remove three screws and remove the main battery case.
2. Remove the screw and remove the battery terminal.
3. Push thru the hole of the portion "B" with tweezers and remove the battery spring holder.
4. Remove the battery spring.

(3) Front body

1. Remove three screws and remove date battery case.
2. Remove four screws and remove the tripod socket.
3. Remove two screws and remove the battery door hinge.
4. Remove the black lead wires of the synchro terminal.
5. Rotate the stopper 90 degrees to remove the stopper. Then remove the synchro terminal.
6. Remove the front body insulation sheet.

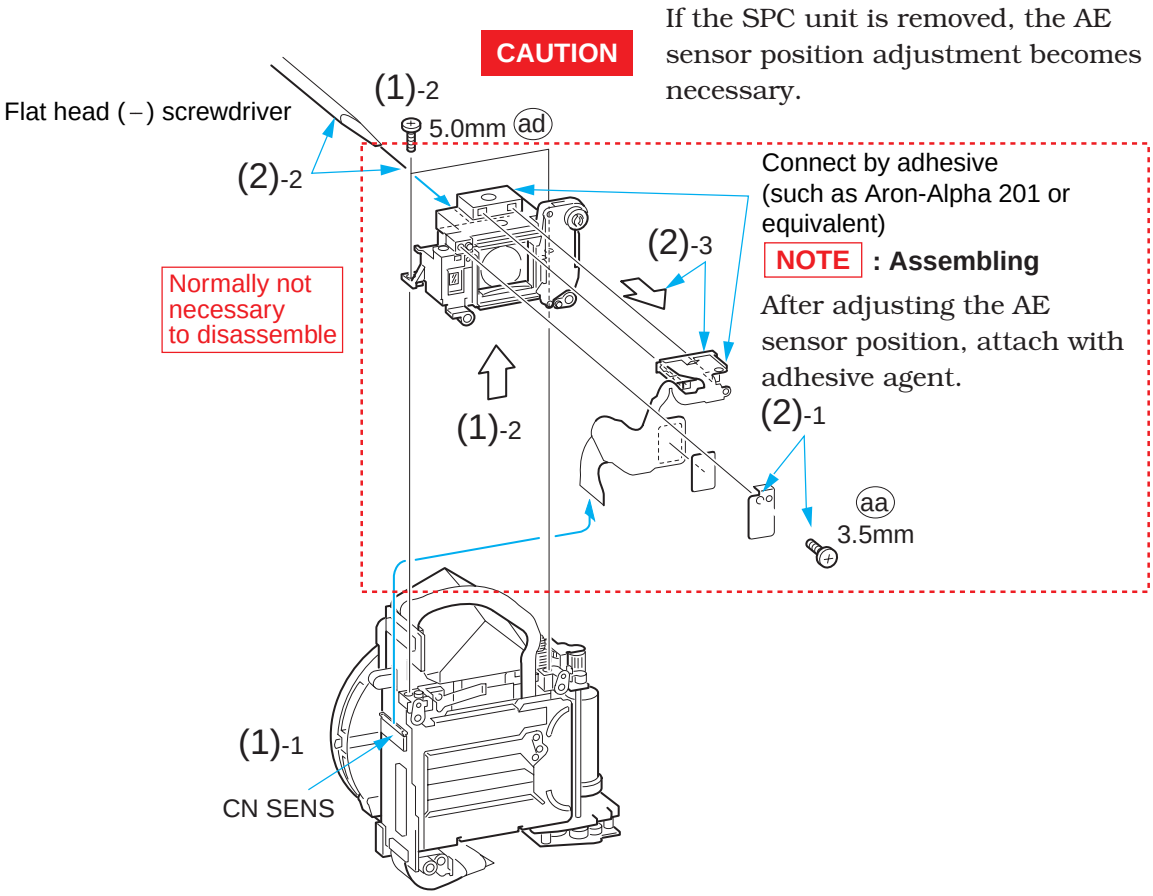


Fig. 3-19 Eyepiece lens and SPC unit

2.13 Eyepiece Lens and SPC Unit

(1) Eyepiece lens unit

1. Remove the FPC from the CN SENS of the C-MAIN PCB.
2. Remove two screws and remove the eyepiece lens unit along with the SPC Unit.

(2) SPC unit

1. Remove the screw.
2. Insert a flat head (-) screwdriver under the SPC holder and peel it off. It is attached by adhesive.
3. Move the holder to the rear and remove it.

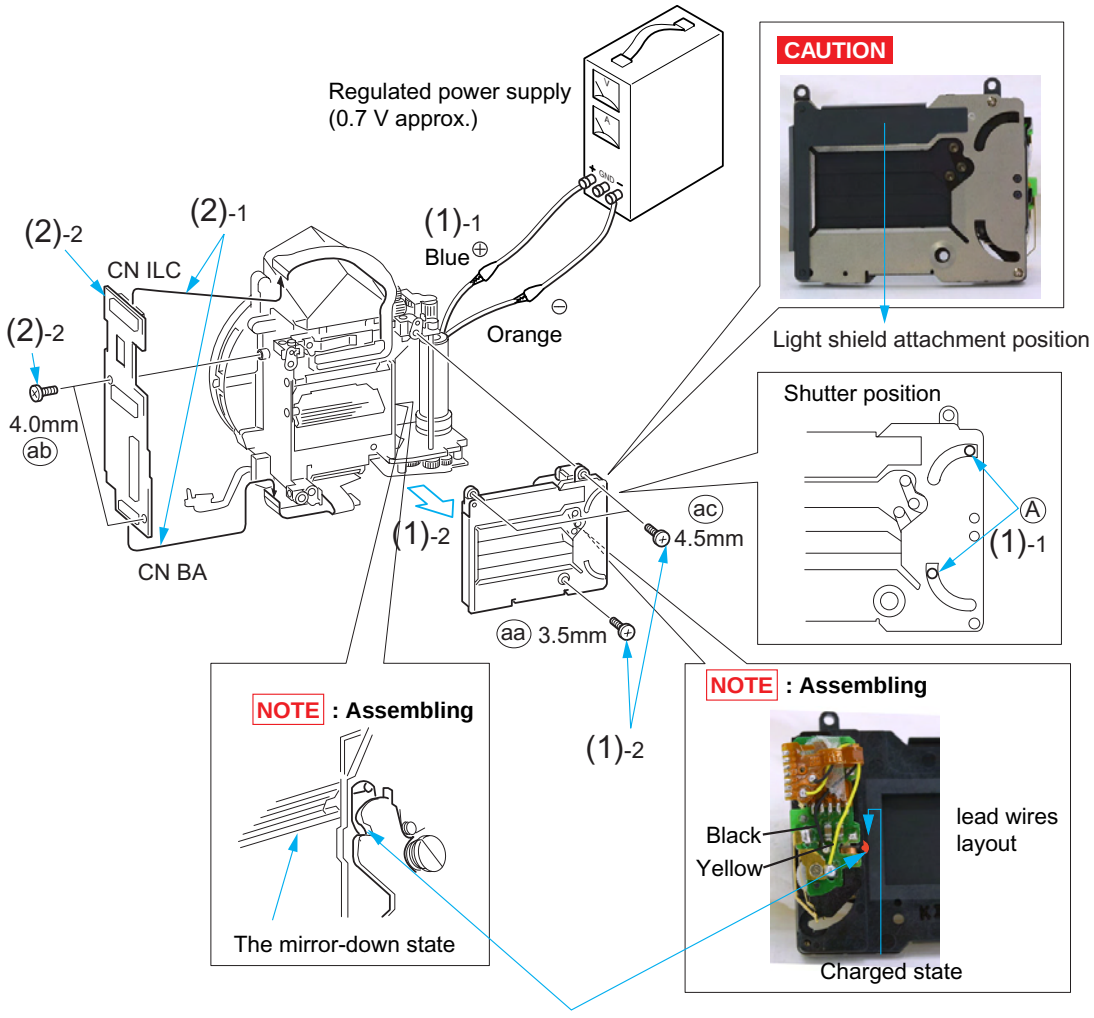


Fig. 3-20 Shutter unit and C-MAIN PCB

2.14 Shutter Unit and C-MAIN PCB.

(1) Shutter unit

1. Apply about 0.7 volts to the shutter motor and stop the shutter at the position "A".
2. Remove three screws and remove the shutter unit.

NOTE : Assembling

(1) Attach the light-shield, the flexible cable, and the lead wire to the shutter unit.
(2) Set the shutter unit in the charged state, and the mirror in the mirror-down position.

CAUTION

Install the shutter unit.

(2) C-MAIN PCB

1. Remove the flexible connector from the connectors CN ILD and CN BA.
2. Remove two screws and remove C-MAIN PCB.

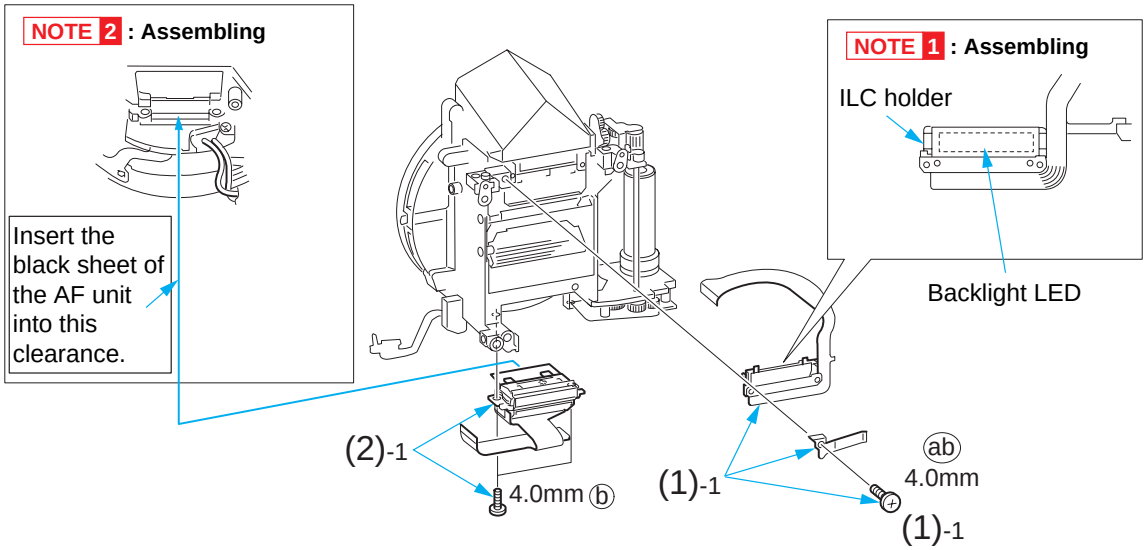


Fig. 3-21 ILC and AF unit

2.15 ILC and AF Unit

(1) ILC unit

1. Remove the screw and remove the ILC unit.

NOTE 1 : Assembling

Confirm that the backlight LED is correctly inserted in the ILC holder.

(2) AF unit

CAUTION

When AF unit is removed, the AF sensor position adjustment becomes necessary. After adjusting the AF sensor position, fix the head of the fixing screw with the adhesive.

1. Remove two screws and remove the AF unit.

NOTE 2 : Assembling

Insert the black sheet of the AF unit into the position shown in the illustration.

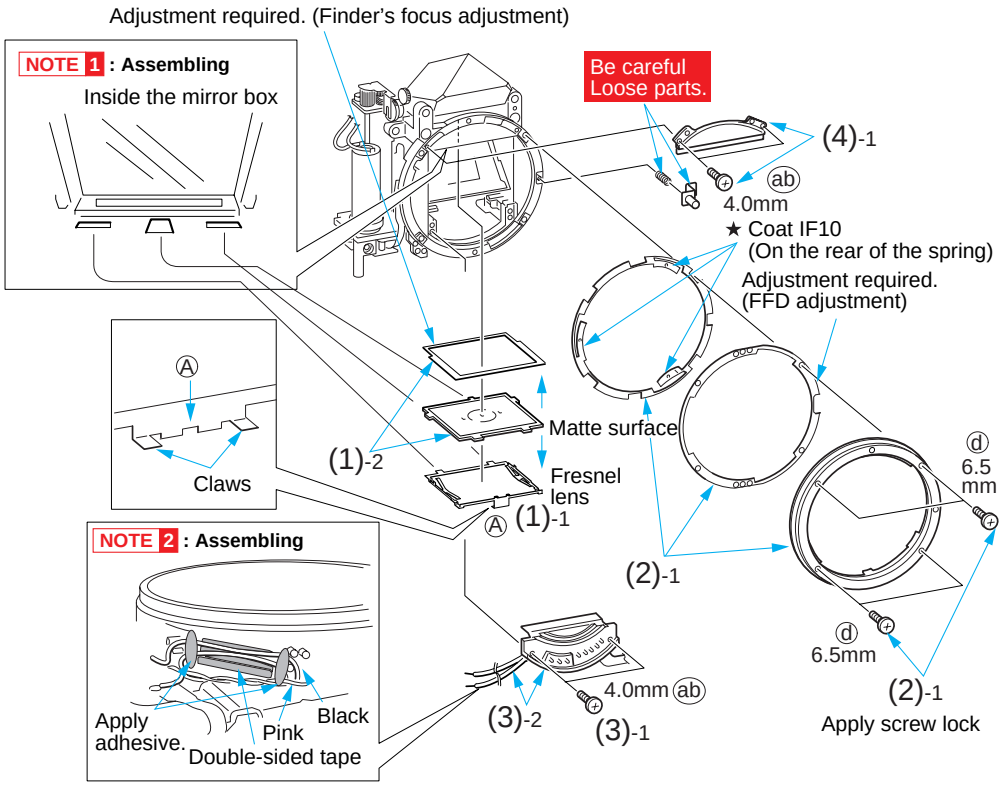


Fig. 3-22 Focusing screen, lens mount and lens mount contact assembly

2.16 Focusing Screen, Lens Mount and Lens Mount Contact Assembly

(1) Focusing Screen

1. Place the tweezers' in the hole at "A", and push to the rear until the claws are unlocked, then press down to remove.
2. Remove the focusing screen and focusing adjustment washer.

NOTE 1 : Assembling

Insert the focusing screen and focusing washer into the respective specified positioning holes.

(2) Lens mount

1. Remove four screws and remove the lens mount.

(3) Lens mount contact assembly

1. Remove two screws.
2. Remove the two lead wires from the front panel unit and remove the lens mount contact assembly.

NOTE 2 : Assembling

Fix the lead wire to the position shown in the figure 3-23.

(4) Mirror box cover

1. Remove two screws and remove the mirror box cover.

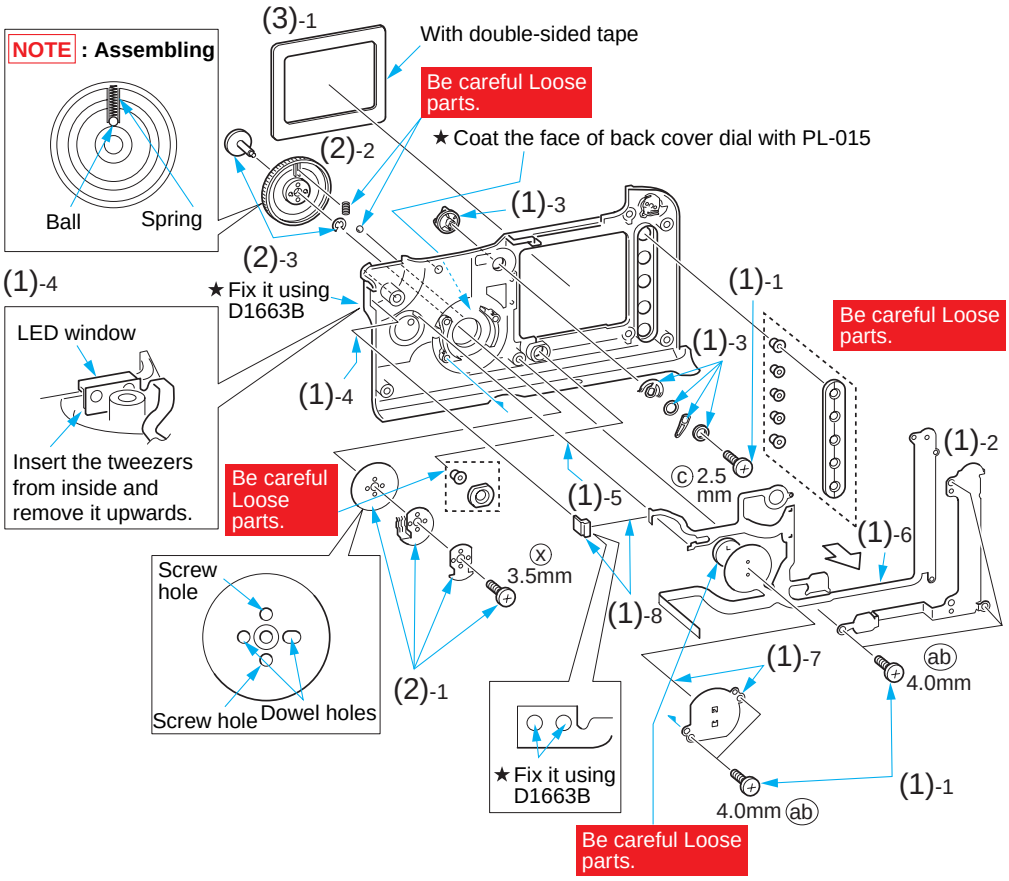


Fig. 3-23 Rear cover block

2.17 Rear Cover Block

(1) BUZZER FPC

1. Remove six screws.
2. Remove the FPC holder plate.
3. Remove the washer, connector, and switch from the back cover (quick-control) dial switch block.
4. Remove the access lamp block from the rear cover with the FPC attached to the LED window.
5. Unsolder the FPC from the buzzer.
6. Remove the BUZZER FPC from the rear cover.
7. Peel off the main dial FPC from the BUZZER FPC.
8. Peel off the adhesive and remove the LED window.

(2) Back cover dial

1. Remove two screws. Remove the washer and connector from the back cover dial block.
2. Remove the back cover dial while taking care not to drop the click spring and ball.
3. Remove the E-ring and remove the SET button.

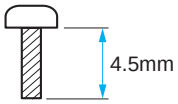
NOTE : Assembling

When assembling the back cover dial, insert the spring and ball into the dial first. After assembling, check the click stops as you rotate the dial.

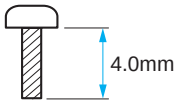
(3) TFT LCD window

1. Remove the TFT LCD window by pushing on it from inside the rear cover.

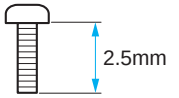
2.18 Screw List

ⓐ CB1-0279


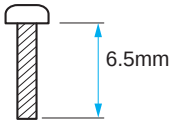
METAL
M1.7
(SELF TAPPING)

ⓑ CB1-1902


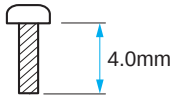
BLACK
M1.7
(SELF TAPPING)

ⓒ CB1-2678


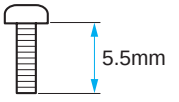
METAL
M1.7

ⓓ CB1-4085


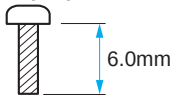
METAL
M2.0
(SELF TAPPING)

ⓔ XA4-6170-409


BLACK
M1.7
(SELF TAPPING)

ⓕ CB2-0719


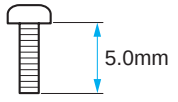
FLAT BLACK
M1.7

ⓖ CB2-0720


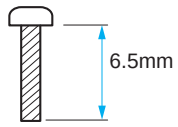
FLAT BLACK
M1.7
(SELF TAPPING)

ⓗ CB2-0721

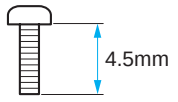
FLAT BLACK
M1.7

ⓘ CB2-0722


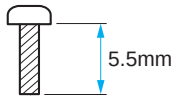
FLAT BLACK
M1.7

ⓙ CB2-0723


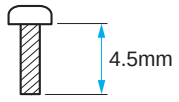
FLAT BLACK
M2.0
(SELF TAPPING)

ⓚ CB2-0724


FLAT BLACK
M1.7

ⓛ CB2-0726


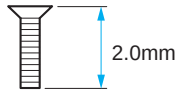
FLAT BLACK
M1.7
(SELF TAPPING)

ⓜ CB2-0727


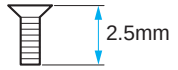
FLAT BLACK
M1.7
(SELF TAPPING)

ⓝ FC2-9551

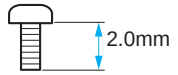
METAL
M2.0
with adhesive

ⓞ XA1-3170-207


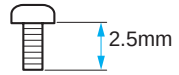
METAL
M1.7

ⓟ XA1-3200-257


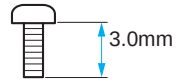
METAL
M2.0

ⓠ XA1-7170-207


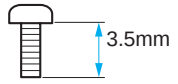
METAL
M1.7

ⓡ XA1-7170-259


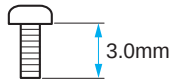
BLACK
M1.7

ⓢ XA1-7170-309


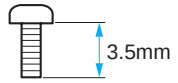
METAL
M1.7

ⓣ XA1-7170-357


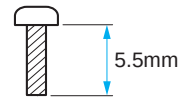
METAL
M1.7

ⓤ XA1-7200-307


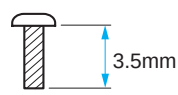
METAL
M2.0

ⓥ XA1-7200-359


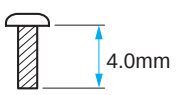
BLACK
M2.0

ⓦ XA4-9200-559


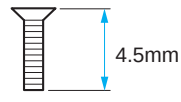
BLACK
M2.0
(SELF TAPPING)

ⓧ XA4-5140-357


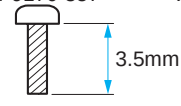
METAL
M1.4
(SELF TAPPING)

ⓨ XA4-5170-407


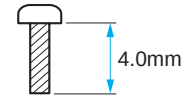
METAL
M1.7
(SELF TAPPING)

ⓩ XA4-8200-459


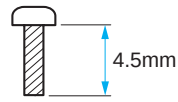
BLACK
M2.0

ⓐⓐ XA4-9170-357


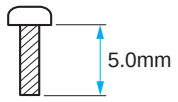
METAL
M1.7
(SELF TAPPING)

ⓐⓑ XA4-9170-409


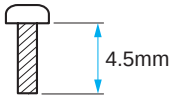
BLACK
M1.7
(SELF TAPPING)

ⓐⓒ XA4-9170-457


METAL
M1.7
(SELF TAPPING)

ⓐⓓ XA4-9170-509


BLACK
M1.7
(SELF TAPPING)

ⓐⓔ XA4-9200-457


METAL
M2.0
(SELF TAPPING)

3. MECHANICAL ADJUSTMENT

3.1 Main Mirror and Sub Mirror Adjustment

CAUTION No adjustment is required. (pre-adjusted service parts provided)

3.2 AF Sensor Position Setting

CAUTION Perform the AF Sensor Position Setting when the AF sensor is replaced.

<Purpose>

The center of the middle AF sensor must be aligned with the optical axis.

<Specifications>

The center of the middle sensor must be located inside the AF frame.

Fig. 3-24 AF frame and BASIS

<Tools>

- EF 50mm f/1.8 (product)
- Penlight or illuminator

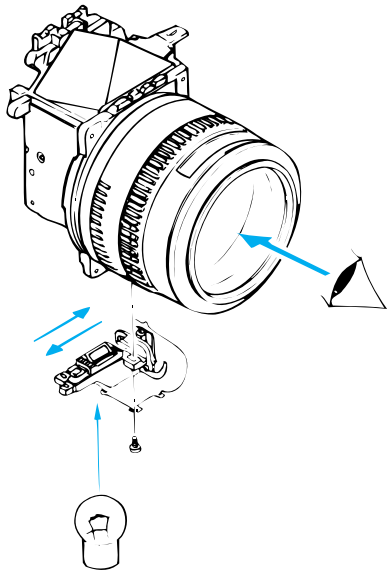


Fig. 3-25

<Preparation>

1) Close the lens diaphragm to f/8 using the product body of EOS-D60.

* Set the EOS-D60 to MANUAL mode and set the aperture to f/8. Then remove the lens while depressing the rear depth-of-field button.

2) Set the distance scale of the lens to the × (infinity) end.
(The AF frame can be viewed more easily.)

<Adjustment>

1) Attach the EF 50mm f/1.8 to the front panel unit with the mirror unit, focusing screen and the AF sensor unit (tentatively fixed) installed.
2) While directing the output light of the penlight toward the AF sensor unit, look into the lens. Then the AF frame and the BASIS image can be seen as shown in Figure 3-26.
3) Move the AF sensor unit right and left until the center is located in the center of the AF frame.
4) Tighten the screw fixing the AF sensor unit gently, and apply Three Bond 1401B to the screw head (If over-tightened, the sensor position may change.)

3.3 Flange to Focal Plane Distance (FFD) Adjustment

CAUTION

Perform the FFD Adjustment when the mirror box unit or mount is replaced.
No adjustment is required for the CMOS sensor service parts (pre-adjusted at the factory).
Perform the FFD Adjustment when tilt focus error occurs when the EOS-D60 receives shock such as being dropped.

<Purpose>

The distance between the lens mount and surface of the CMOS must be adjusted to the specified FFD for the EOS camera / EF lens system. The surface of the CMOS is not accessible, so the "washer plane" where the CMOS unit mounts to the body is used instead.

* The distance between the washer plane and the CMOS sensor plane cannot be adjusted by service. Service parts are pre-adjusted at the factory.

<Specifications>

The distance between mount plane and the washer plane is measured using the dedicated tool, and must be 41.30 ± 0.02 mm.
Parallelism: 0.04 mm or less

<Tools>

- Digital micrometer
- Mount Fastening Tool (CY9-1547-000)

<Preparation>

1) Set the mount fastening tool to the digital micrometer and reset the meter so that the reference plane of the mount becomes "0".
2) Attach the mount fastening tool to the lens mount.

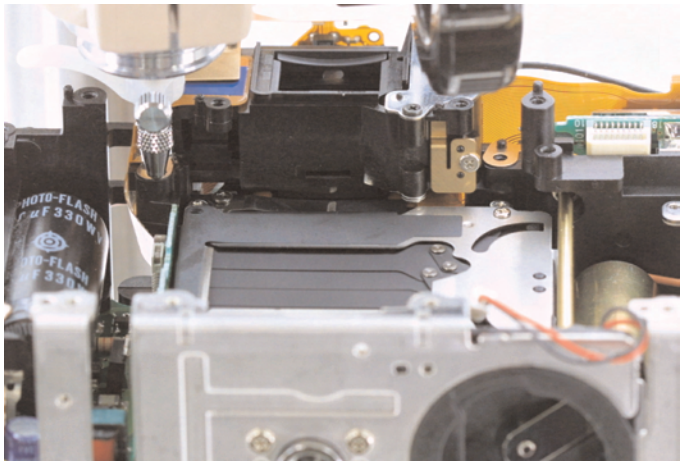
Fig. 3-26

<Adjustment>

1) Remove the CMOS censor unit.
2) Measure the distances to the respective CMOS mounting washer planes.
3) If the measured distance does not satisfy the specifications, adjust the distance by replacing the mount with the service mount (CY1-1280) and by selecting the appropriate adjustment washer (CB2-0682-000-XXX) until the specification value is satisfied.

* Refer to the Part List for details of the adjustment washers.

4) After the adjustment, take a picture of the 3-D chart and check the best focal point. If an adjustment is required, perform AF shift at same position.



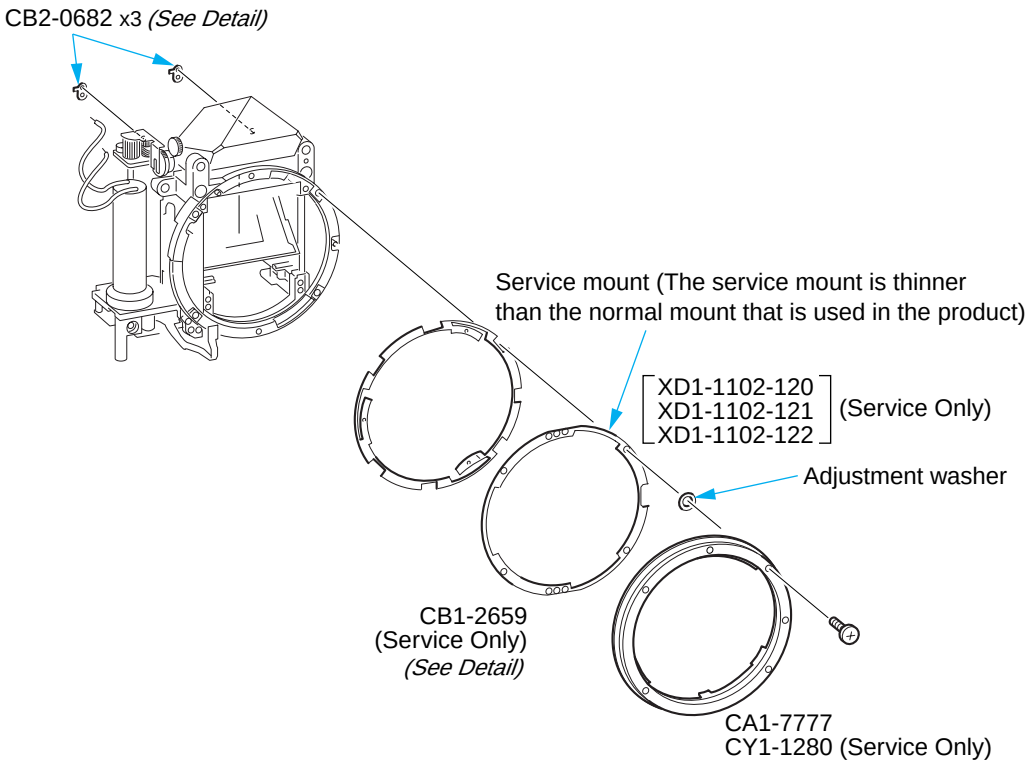


Fig. 3-27 FFD adjustment

3.4 Finder Focus Adjustment

CAUTION Perform the Finder Focus Adjustment only after the FFD Adjustment is completed.

<Purpose>

The sensor focus point and the finder focus point must be the same.

<Specifications>

The center of the × (infinity) mark must be positioned within the 1.5 index line widths of the index line as shown below.

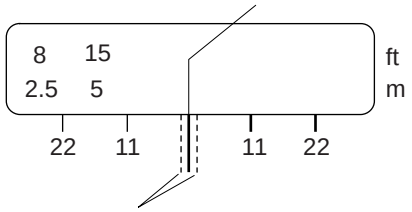


Fig. 3-28 Focusing scale window of lens

<Tools>

- Magnifier AD-S
- Lens with focusing scale. Lens of 100 mm focal length or less is desirable.
- General purpose 500mm collimator

<Adjustment>

1) Without the lens attached to the EOS-D60, adjust so the AF frame in the center of the finder is using the diopter adjustment dial of the camera.
2) Attach the magnifier to the camera eyepiece and adjust the diopter of the magnifier. (Adjust the diopter without the lens attached.)

- Dioptor adjustment method -

With the camera pointed at a wall having the high brightness and high reflectance (such as white wall having EV12 or the light source of the shutter testing equipment), adjust the diopter adjustment ring of the magnifier until the AF frame is sharpest.

3) Attach the lens, and set the distance scale to × (infinity). (If the center of the × (infinity) mark is positioned within the 1.5 lines widths of the index line, it is satisfactory.)
4) Shoot an object that is located at least 250m away (such as lightening rod or chimney) and select the finder focus washer that gives the clearest view of the object.

* When a collimator is used, select the focus washer that gives the clearest view of the collimator scale.

- Replacement of focus washer -

Push in the two round holes of the focusing screen retainer with tweezers, then the focus washer can be removed together with the focusing screen.
When doing so, take care not to push too strongly. If you do, the spring pressure of the focusing screen retainer becomes weak.

CAUTION

Take care not to scar the focusing screen and print-type mask during the above adjustment work.
When re-assembling the parts back to the original product, check to see that the focusing screen and the focusing screen retainer are surely set in place.

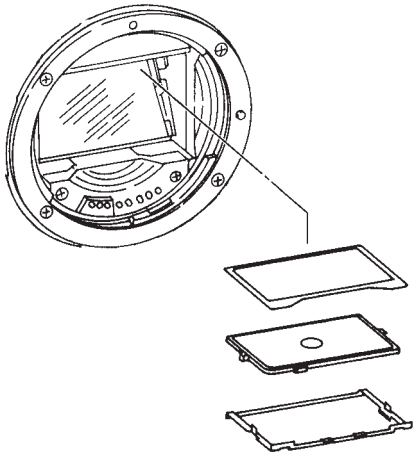


Fig. 3-29

4. SIMPLIFIED MEASUREMENT METHOD OF EXPOSURE AND SHUTTER

The histogram display function provides a simple but effective method of checking exposure and the shutter operation.

Removing the DIGITAL block takes time and using the histogram display function enables judgment of exposure and shutter without removing it.

<Preparation>

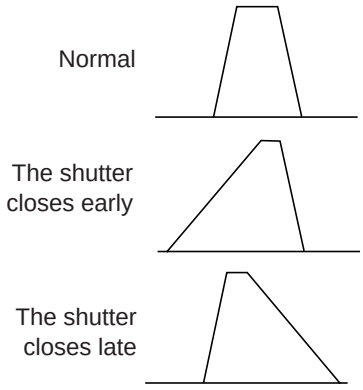
1) Press the <AF/WB> button in the left of the display panel.
   Turn ON the back cover dial and let the display show the white balance selection mode.
2) Turn the back cover dial to select the desired option name by highlighting it.
3) Set the white balance to the incandescent lamp marking.

<Confirmation of Shutter Speed>

1) Set the shutter speed of the camera to 1/4000, aperture to f/2.8, luminance LV15 and K value to 12.5. Let the camera close the shutter.
2) Check to see that the normal histogram as shown in the figure below appears. If the center of the histogram is either in the right or in the left, the histogram indicates that the amount of incident light on the CMOS sensor is either excessive or short. It is suspected that the shutter speed of 1/4000 is actually not realized.

CAUTION If luminance of EV15 is not correct, center of a picture is not positioned in the center as shown in the figure below. Luminance at EV15 and K value 12.5 is 4096 cd/m^2.

When the histogram has a symmetrical shape, it indicates that the correct shutter speed is obtained. Refer to the figure in the right.



<Confirmation of Exposure>

1) Be sure to set the white balance in tungsten.
2) Set the camera to the program mode (select either TV or AV mode).
   Let the camera close the shutter at each luminance level.
3) When the exposure is correct, the correct histogram as shown in the right appears.

The histogram graphs when exposure is changed, are shown as follows.

0.5 stop under

1 stop under

1.5 stop over

2 stop under

0.5 stop over

1 stop over

1.5 stop over

2 stop over

Part 4

Electrical Adjustments

1. ELECTRICAL ADJUSTMENTS

1.1 Cautions

- The adjustment software is compatible with Windows 98 SE, Windows ME, and Windows 2000. The computer must have a Pentium II 233 MHz or higher processor, 128 MB of RAM, and a 800×600 (1024×768 recommended) or larger monitor. To install all the adjustment software, about 20 MB of hard disk space is required.
- The manuals for the adjustment software are bundled together with the respective adjustment software program. On the initial screen, you can select "no camera" so that you can use the software without connecting a camera.
- Before servicing, jot down the user's settings, such as Custom Function (C.Fn) settings, owner's name, and the serial number. All of the data of the camera section and the digital section can be saved with the adjustment software by doing "data save".
- Since the color chart or light source (EF8000, 5000) will have slight idiosyncrasies, first use a known-good (non-defective) camera to check the characteristics. For details, see "1.8 Digital Adjustment and Standard Data Creation."
- Before doing the adjustment, be sure to turn off the "Auto Power Off." If the power turns off during the adjustment, an error may occur.
- Perform maintenance of the light source (EF-8000, 5000) at regular intervals. See "1.7 Light Source Maintenance."
- Imager file data is appended in a floppy disk with the replacement parts. If the imager file data has been lost due to the replacement of the D board, etc., you can obtain it from the Canon FTP site. To access the Canon FTP site, contact your local HQ. (FTP site is planned to open up in early 2002.)
- The imager file can be updated (Pixcel dot update added). See "1.10 Updating the Imager File."
- When exporting the image to an image-editing program such as Photoshop, make sure the "processing parameters" are set to the standard settings.
- A replacement digital board unit (CG2-0710) from stock may have the old firmware. Before doing the adjustment, check the firmware version. If it is an old version, update the firmware before doing the adjustment.
- For the AF adjustment, there is no need to input the flange focal distance. After the AF adjustment, photograph a 3-D chart and check the focus. If fine adjustment is necessary, adjust by shifting the AF focus. See "1.9 AF Adjustment."
- If the user says that focusing is faulty, avoid shifting the focus at first. Instead, try and obtain the user's lens and check it.
- When adjusting the camera's exposure, check the "SPC Positioning Adjustment." After the digital section adjustments, do a final check.
- New main board units (CG2-0770) already have the initial data written within. Therefore, initialization is not necessary.
- When adjusting the digital section, defragmentation of the adjusting area may be required. (Especially when you are transfering the imager file.) See"1.14 Defragmenting the Adjusting Area."

1.2 Installation Procedure

The TWAIN driver from EOS DIGITAL SOLUTION DISK must be installed.

Supplied software:

- Adjustment software: EOS_D60.exe
- Defragmentation program: EOSD60_Defrag.exe
- CMOS scratch data update program: EOSD60_Compiler.exe

Software to be procured locally:

- Internet Explorer 4 or higher
- EOS D60, TWAIN driver (EOS DIGITAL SOLUTION DISK)

Installation procedure:

Adjustment software installation

1) Install Internet Explorer 4 or higher.
2) Install TWAIN driver (EOS DIGITAL SOLUTION DISK).
   * Before installing the adjustment software, make sure it works.
3) Install the adjustment software.
4) Install the CMOS scratch data update program.
5) Re compression the defragmentation program.

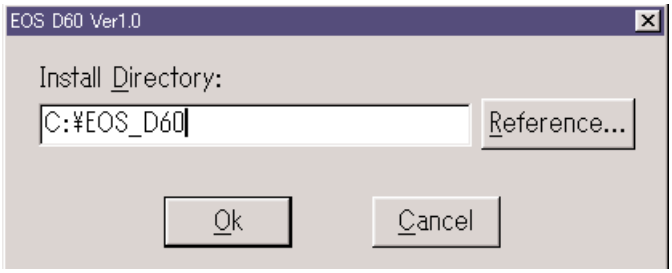
Uninstall procedure:

Adjustment software uninstall procedure

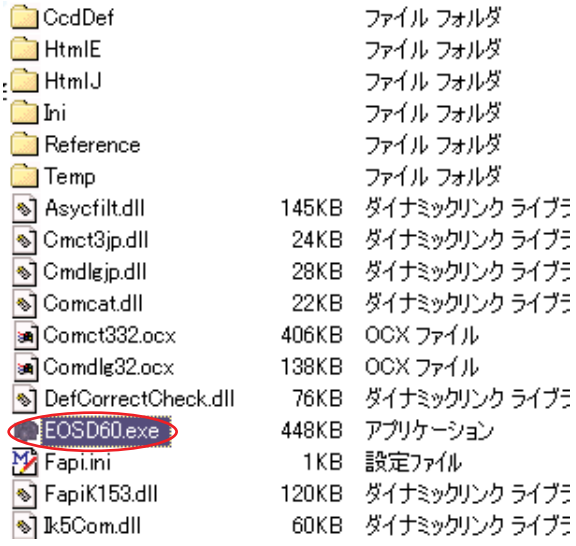
1) Move the holder containing the CMOS scratch data update program (EOSD60_Compiler.exe) to the trash bin.
2) Move the holder containing the adjustment software (EOS_D60.exe) to the trash bin.
3) Uninstall the TWAIN driver. (See manual.)

Adjustment Software Installation Procedure

1) Double-click EOSD60.exe.
2) From the list that appears, select the desired location to install the software. If you click "Reference," you can choose where to install.

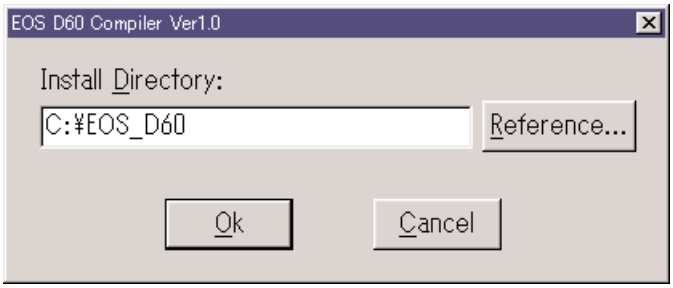


3) The name of the adjustment software is "EOS_D60. exe" Double-click this file to start up the adjustment software.



CMOS Scratch Data Update Program Installation Procedure

1) Double-click EOSD60Compiler.exe.
2) From the list that appears, select the desired location to install the software.



3) The name of the adjustment software is EOSD60_Compiler. exe" Double-click this file to start up the adjustment software.

1.3 Description of Camera's Electrical Adjustments

CAUTION

For AF adjustment, there is no flange focal distance to be input.
After the AF adjustment, photograph a 3-D chart. If fine adjustment is necessary, adjust by shifting the AF focus.
Before doing the adjustment, be sure to turn off "Auto Power Off." If the power turns off during the adjustment, an error may occur.

The electrical adjustments consist of the following:

Temperature adjustment	Adjustment of the camera's temperature sensor.
Serial number resetting	Set the serial number.
Imager file transfer	Transfers the imager file.
AE adjustment menu	
• Shutter adjustment	Adjust the shutter speed at 1/4000 sec.
• SPC positioning	Adjustment and check of the AE sensor's position
• AE basic adjustment	Adjustment of AE sensor's output.
• AE shift	The exposure level can be shifted in 1/8-stop increments to suit user preferences.
CMOS Exposure adjustment	Adjustment for the CMOS to obtain the correct exposure level.
• Black level • ISO Exposure • Shading	
White balance adjustment	Adjustment of white balance sensor.
Color matrix adjustment	Adjustment of the color matrix.
AF adjustment menu	
• Basic adjustment	Optimum adjustment of the AF sensor's output.
• AF focus adjustment	Adjustment for optimum focus position.
• Image/Focus data	The AF sensor's output data is used for waveform and chart setting and for AF precision checking, and displays the focus data.
• AF shift	AF compensation shift
Flash adustment	Adjust EFIC's gain and level
TFT adjustment	Adjust the TFT-LCD's display position.
Self-check	All the camera's LCDs are turned on, error codes are erased, and the error No.is displayed.
Data transfer	The camera's data can be initialized and the data can be transferred to be saved.

1.4 Required Electrical Adjustment Chart Upon Camera Disassembly

Adjustment Items	Digital Board (CG2-0773) (Data illegible)	Digital Board (CG2-0773) (Data legible)	Main Board (CG2-0770) (Data illegible)	Main Board (CG2-0770) (Data legible)	Shutter Unit (CG2-0761)	AE Unit (CG1-3798)	AF Unit (CG1-37951)	C-MOS, Analog Board (CY3-1393 CG1-0771)	TFT Board Unit (CG1-0772)
Shutter speed adjustment			3		2				
SPC positioning						1			
AE accuracy adjustemt			2			2			
AE shift adjustment			*			*			
Basic AF adjustment			4				1		
AF focus adjustment			5				2		
Image data/focus data output							*		
Gain adjustment			6						
Level adjustment			7						
LCD full-lighting									
Error code deletion									
SI luminance adjustment			*						
Error codes									
Shutter counter reset					1				
Temperature compensation		None	1	None					
Initialization									
Data storage									
Data transfer									
Imager file transfer	1							1	
Writing camera ID	2								
C-MOS exposure level adjustment	3							2	
White balance adjustment	4							3	
Color matrix adjustment	5							4	
Writing TFT data	6								1
TFT position adjustment	*								*
TFT luminance adjustment	*								*
Initialization									
Data storage									
Data transfer									

* Perform as necessary

1.5 Checking and Adjusting the AE, E-TTL, and Exposure

CAUTION

The light source (EF8000, 5000) must be maintained as indicated in "Light Source Maintenance." It must produce the correct brightness (LV 9 = 64cd/m2) especially if you will check the exposure level.
The user may request that the exposure level be increased or decreased. In such a case, first check the exposure level and do the adjustment with the camera.

Checking the Exposure Level

If the EOS D60's camera metering sensor (SPC) output and the shutter adjustment are correct, the camera will obtain correct exposure. And if the digital section's ISO setting is adjusted correctly, the digital section should obtain the correct exposure. If the user wants the exposure level to be increased or decreased, check the total exposure level, then refer to it when making the exposure level adjustment with the camera.

To check the total exposure level, you will need the adjustment software or an image-editing program like Photoshop. The procedure using the adjustment software is explained below.

* This procedure is for checking if the exposure level is correct as it would be with film in a film-based camera.

Total Check

1) Connect the camera and start up the digital adjustment software.
2) Select "Test shooting"
3) Set the camera settings as follows. Take pictures while changing the ISO speed and shutter speed.
   Camera settings
   - Camera mode: Aperture-priority AE
   - Aperture: f/8.0 (f/5.6 is acceptable)
   - Shutter speed: Auto
   - ISO: All ISO speeds
   - White balance: Tungsten
   - Image size: JPEG, L size
4) Press the shutter button.
5) The image will be captured. Drag (select) the mouse at the center of the image.
6) The image's RGB and YCrCb will be displayed. Check that the RGB's G value is 120 count +/-10 count. This 120 ount is the same at all ISO speeds. If you use an image-editing program like Photoshop, do the same as above by selecting the image center to display the RGB outputs. If the G value is the same, it is okay.

If it does not meet the standard:

Reference With exposure, each count is equivalent to 0.020EV, so the exposure becomes 0.20EV at 10 counts. For this reason, you can judge overexposure and underexposure taking about 120 counts (dependent on white balance) as the reference when a surface of uniform brightness is photographed.

Check the CMOS brightness level adjustment and SPC sensor positioning. If it is not the correct value, correct it. Also, if the user requests an increase or decrease of the exposure, do the AE shift adjustment with the camera.

Checking the CMOS Sensor Output

1) Connect the camera and start up the adjustment software.
2) Select "Check the Image"
3) Set the camera settings as follows. Take pictures while changing the ISO speed and shutter speed.
   Camera settings
   - Camera mode: Manual
   - Aperture: f/8.0
   - Shutter speed: 1/125 sec. (ISO: 100), 1/250 sec. (ISO: 200), 1/500 sec. (ISO: 400), 1/1000 sec. (ISO: 800)
   - ISO: See above "Shutter speed"
   - White balance: Tungsten
   - Image size: JPEG, L size
4) Press the shutter button.
5) The image will be captured. Drag (select) the mouse at the center of the image.
6) The image's RGB and YCrCb will be displayed. Check that the RGB's G value is 120 count +/-10 count. This 120 count is the same at all ISO speeds. If you use an image-editing program like Photoshop, do the same as above by selecting the image center to display the RGB outputs. If the G value is the same, it is okay.

   If it is not 120 count +/-10 count:

- The light source's brightness is in error. --> See "1.6 Light Source Maintenance."
- The camera's ISO speed adjustment is wrong. --> Adjust the ISO speed. (When the ISO speed is adjusted, you will also have to do all the CMOS-related digital adjustments.)

Checking the Camera and AE Sensor Output

CAUTION Be sure to use a normal EF 50mm f/1.8 lens.

Check the amount of light that the camera's AE sensor receives.

1) Attach an EF 50mm f/1.8 lens to the camera and start up the adjustment software.
2) Select "AE adjustment" and then "SPC positioning"

3) Face the camera toward the light source (EF8000, 5000).
4) Change the light source to LV 9, LV 12, and LV 15, and check the SPC output value. If "12.5" is displayed for the output value when the light source is set to LV 12, the camera is receiving too much light. Control the exposure by decreasing it by 0.5 EV.

Required standard: Within +/-0.25 EV at every brightness

If it does not meet the required standard, shift the AE or do the AE basic adjustment. With AE shift, increase or decrease the overall exposure level. If the required standard is met at LV 9, but not at LV 15, the exposure's gain must be adjusted. In such a case, do the AE basic adjustment.

1.6 Digital Section Adjustment and Standard Data Generation

CAUTION

This procedure must be done before the digital section adjustment. (Especially, generating this standard data is very important. If it is not generated, the correct color reproduction will not occur.)
Do the regular maintenance (data generation). (This is not necessary each time you do the adjustment. However, be sure to do it when the light source bulb has been replaced or the location has been changed.
A known-good camera is required for a data generation.
A standard data will be stored in the Reference folder where the adjustment software has been installed. It is recommended to back up the data, because it will be deleted when the adjustment software is deleted or updated.

Before doing the digital section adjustments, the light source and color chart characteristics must be measured and saved in the personal computer.

Required standard data:

- CMOS white balance data (WhiteBalanceRef.wb)
- Color matrix chart data (MatrixChart.pos)
- Color matrix adjustment data (ColorMatrixRef.mat)

* The name of the file in the Reference folder is in parentheses.

These data are saved within Reference in the folder where the adjustment software is installed. Be sure to make a back-up copy of these data.

CMOS White Balance Basic Data

The CMOS white balance adjustment is for fixing the irregular output caused by the CMOS's color. As explained below, use a known-good camera to measure the light source's characteristics and filter characteristics.

•Required tools

- Light source (EF8000, 5000)
- C12 filter × 2

Adjustment procedure:

1) Attach an EF 50mm f/1.8 lens to the known-good camera and connect the camera to the computer. Start up the digital section adjustment software.
2) Select "CMOS white balance adjustment."
3) Select "Basic data generation."
4) Set the light source (EF8000, 5000) to LV 12. Set the lens to manual focus and infinity.
5) After everything is set, click "Set completed."
6) Attach a C12 filter to the lens, and click "Set completed."
7) Attach another C12 filter (total 2 filters) to the lens, and click "Set completed."

The CMOS white balance data's basic data can now be generated. Click "Check standard data" to check the data. Jot down this data on a piece of paper.

Color Matrix Basic Data

CAUTION

"Colors" drawn in the graph change according to the overall exposure level. For this reason, adjust the exposure so that the "Y" level of the white on the color bar is 178±10 counts during measurement.

The color matrix basic data is used as the index for judging colors.

Required tools

- Color viewer
- Color bar chart

Measurement procedure

1) Attach a normal EF 50mm f/1.8 lens to the known-good camera and connect the camera to the computer. Start up the digital section adjustment software.
2) Select "Color matrix adjustment."
3) Select "White balance setting", adjust the white balance to the color viewer. Put the camera close to the color viewer and press "Release." By releasing, the white balance will be memorized.
4) Select "Color setting"
5) Set the camera as follows(It will be set automatically):
   - Shooting mode: Aperture-priority AE
   - Aperture: f/5.6
   - ISO: 100
   - White Balance: Auto
   - Image size: JPEG, L-size
5) Place the color bar chart on the color viewer, and adjust so that the chart is correctly positioned. For details, see the adjustment screen. After everything is set, click "Cancel."
6) Select "Image evaluation," and click "Release." When you click "Release," the image will appear. Select the center of each color.
7) Put the cursor over the graph's point, and right-click the mouse to select "Set." That point will then be saved. Repeat this step for all seven color bars.

*If the "Y" level is not 178±10 counts, adjust the exposure setting.

If you selected "Set" by mistake, right-click the mouse and select "Clear."

The points you set will become the color bar chart's characteristics. This point-matching adjustment will be done later.

1.7 Maintenance of Light Source

CAUTION

Do regular maintenance (data generation). (This is not necessary each time you do the adjustment. However, be sure to do it when the light bulb has been replaced or the location has been changed.) The maintenance procedure is presented in a video called "Repair Technique Basic 1, 2" (CY8-1310-007, 008 for Japanese and CY8-1320-007, 008 for English).

For digital cameras, maintaining the light source is very important for adjusting the ISO sensitivity. With the EOS D60, the standard amount of light for each ISO speed is set based on the LV12 light source.

* According to the ISO standard, ISO 100's standard exposure amount is stipulated as 0.1 lux/sec. where the exposure amount (lux/sec.) is expressed in lux (the light's brightness) and sec. (time of light radiation). Therefore, if you use ISO 100 film, you can obtain the same result with the same amount of light regardless of the film's manufacturer.

Required tools

- Light source (EF8000, 5000)
- Luminance meter BM-300, 3000

Procedure

1) Turn on the light source. Wait at least 10 minutes before starting the measurement. While you wait, thoroughly clean the surface of the light source.
2) Use the luminance meter to measure the light source.
   Required standard:
   LV 9: 64 cd/m^2 (59.7 - 68.6 cd/m^2)
   LV 12: 512 cd/m^2 (477 - 548 cd/m^2)
   LV 15: 4096 cd/m^2 (3821 - 4389 cd/m^2)

* The K value is 12.5, correctable within +/-0.1 EV.

3) If adjustment is necessary, adjust with the variable resistor. (see the manual of EF8000, 5000)

1.8 Imager File Update

CAUTION

To find the correct location of CMOS defects, a RAW image must be used instead of JPEG which blurs the defect. The defect location coordinates to be input are also based on the RAW image. EOSD60_complier.exe will calculate the location with the full size pixel of CMOS.That causes the number of pixels' differece from the full size pixel images(3152 × 2068) to the JPEG (Large-Fine : 3072 × 2048).
The "defect" found could also be a piece of dust, etc. Before starting, be sure to clean the CMOS.

The CMOS's defect data can be updated.

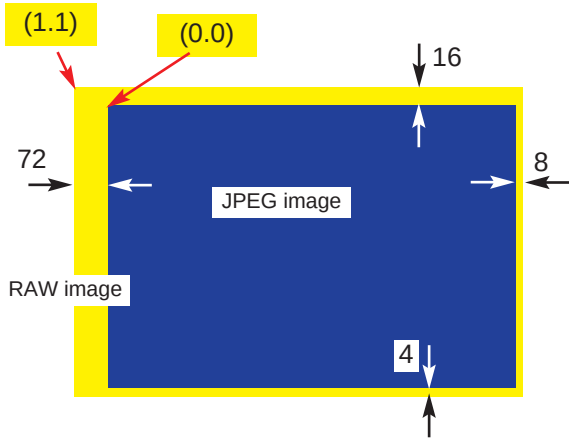
* CMOS is susceptible to ultraviolet rays and cosmic rays. Therefore, avoid leaving a bare CMOS in the open. Store it in a dark place. Also, beware of static charge. When handling the CMOS with bare hands, be sure to wear grounded wrist bands.

1. Procedure

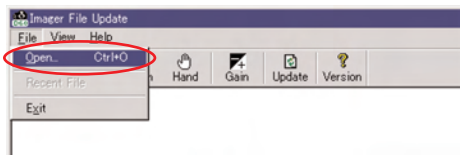
<Obtain the imager data of the camera. (Contact Head quarters in your region or access the FTP site.)>

<Find the defect location specified by the user.>

1) Start up EOSD60Compiler.exe, and open the problem file specified by the user. Compiler.exe can handle only RAW images. If the image file is JPEG format, handle the file as a RAW image referring to "Confirmation Method." The figure on the right shows the differences between a RAW image (2496 × 1662) and JPEG (Large-Fine: 2646 × 1648) image. With image processing software such as Photoshop, the top left coordinate is expressed as (0,0), whereas on Compiler.exe, it is expressed as (1,1). For this reason, in the case of positions pointed out by the user, the defect location at (1234, 321) on a JPEG (Large-Fine) image is expressed differently as follows:
X=1234+72+1=1307
Y=321+16+1=338



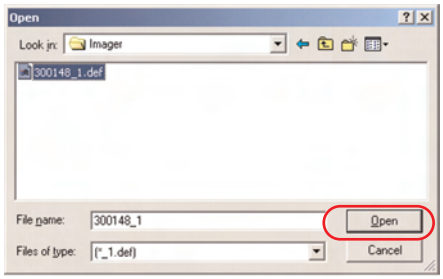
2) Find the defect. Select the RAW file by "OPEN" from "FILE" in the figure on the right.



3) PClick the button in the figure on the right. Image enlargement /reduction and the currently displayed gain can be changed. Set the image so that defects can be distinguished. To do this, set gain to about 1.0.

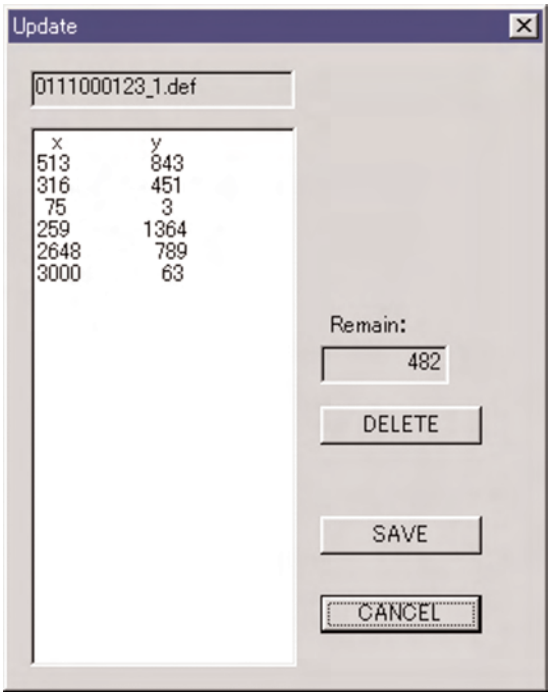
4) Click the "Update" button.

5) When you click the "Update" button, choice of the files will displayed. Then choose "xxxxxx_1def." "xxxxxx" is the CMOS imager file number.



6) Click the defects desired to add. The coordinates will be added to the Defect List. If wrong position is set, choose it and click "DELETE." Click "SAVE" to add the coordinates to the file.

7) For the "OUTPUT FILE," AjDef00.imag, AjDef01.img, AjDef02.img, AjDef04.img, AjDef05.img, AjDef06.img, AjObSkip.img will be created.



<Rewrite the data>

1) Connect the camera to the computer, and start up the adjustment software.
2) Select "Transfer imager file."
3) In the text box, type the imager number and click "Update."
4) A dialog box for selecting the imager file will appear. Select the AjDef0?. img, and AjObSkio. img, files that were created before. The files will then be written to the camera.
5) After the writing is completed, quit the adjustment software program and turn on the camera. (If the camera is not turned on, the files will not be updated.)

* When you update the imager file, the CMOS brightness level adjustment need not be done again.

2. Check Procedure

There are two types of CMOS defects: "White defects" which light up in low light, and "black defects" which do not light up in bright light. Therefore, depending on the shooting conditions, there will be defects you can and cannot see. To see the defects, use the methods described below.
If you cannot obtain a RAW image, also follow the methods below.

<Settings for finding white defects>

1) Attach the body cap to the camera and close the eyepiece shutter. Set the camera as follows:

Shooting mode:	Shutter-priority AE
Shutter speed:	1 sec.
ISO:	1000
White balance:	Auto
Image size:	RAW

<Settings for finding black defects>

1) Attach an EF 50mm f/1.8 lens to the camera, and set the camera as follows:

Shooting mode:	Aperture-priority AE
Aperture:	f/8
ISO:	100
White balance:	Auto
Image size:	RAW

2) Photograph.
3) Open the captured image with EOSD60 Compiler.exe.
4) Check if the image has been corrected.

1.9 AF Focus Adjustment Procedure

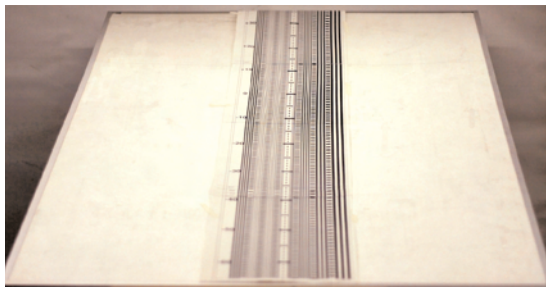
CAUTION

For the AF adjustment, there is no need to input the flange focal distance. After the AF adjustment, photograph a 3-D chart and check the focus. If fine adjustment is necessary, adjust by shifting the AF focus.

With film-based SLR cameras, the flange focal distance was input during AF focus adjustment and then the adjustment was made. Since it is difficult to measure the distance to the CMOS surface, follow the procedure below. Note that as with mechanical adjustments, the flange focal distance must be adjusted. (Since it also affects the CMOS's tilt and viewfinder focus.)

<Adjustment Procedure>

1) Attach the tool lens and connect the camera to the HS-I/F or Multiple Tool II. Then start up the camera adjustment software.
2) Select "AF adjustment" and "AF focus adjustment."
3) Follow the on-screen instructions and do the adjustment with aging and three charts.
4) Obtain a 3-D chart and place the camera 2.5 meters away from the center of the 3-D chart.
   (Be sure to illuminate the chart with a video light or other light source.)
5) Photograph.



- Shooting conditions
  Shooting mode : Aperture-priority AE
  Aperture : f/1.8
  ISO : 100
  White balance : Auto
  Image size : JPEG (Fine)
  AF point : Center only

6) Import the image to an image-editing program such as Photoshop. Check the image to see how much it is off from the chart. (Good only at the center)
7) If there is no error, the adjustment is completed. If the focus is shifted, correct the focus with AF focus shift. Calculate the shift amount as shown below. The AF focus shift can be adjusted in 0.005 mm increments. After completing the AF shift, repeat from step 5 above to check the adjustment.

$$\text{CCD off-position amount} = \frac{\text{Off-position amount relative to subject} \times 1}{(\text{magnification})^2}$$

$$= \frac{\text{Off-position amount relative to subject} \times 1}{2500 \text{ (EF 50mm f/1.8, at 2.5 m)}}$$

*

- The defocus amount relative to the subject is the 3-D chart's off-position amount expressed in mm.
- Positive correction (+) will result in a front focus, and negative correction (-) will result in a rear focus.

* Reference (Correction amount with an EF 50mm f/1.8, at 2.5 m.)

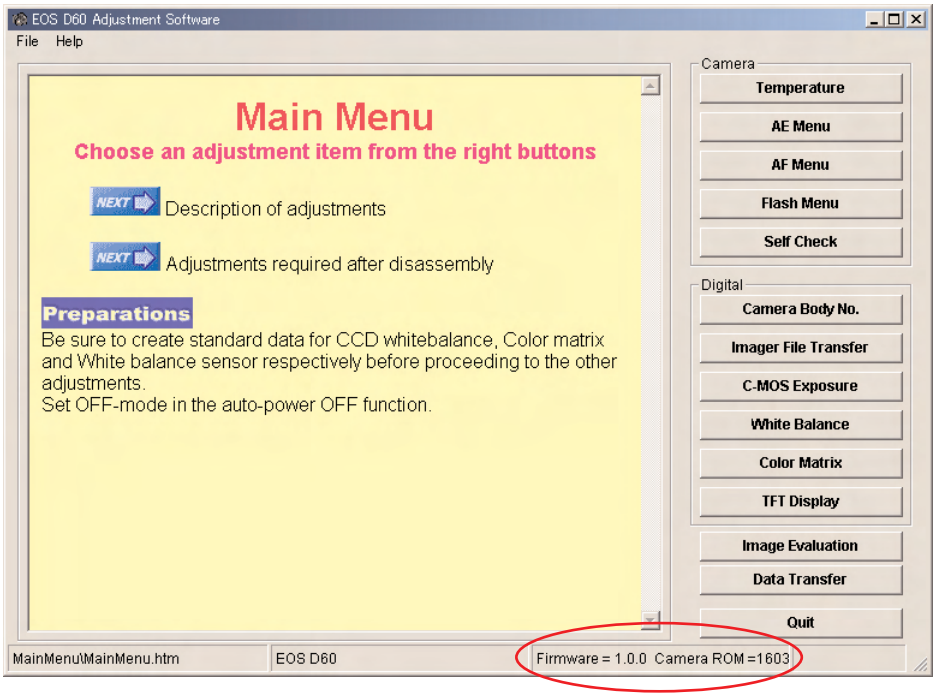
Distance to Subject			Correction Amount	Distance to Subject			Correction Amount
mm	cm	m	mm	mm	cm	m	mm
12.5	1.3	0.013	0.005	262.5	26.3	0.263	0.105
25.0	2.5	0.025	0.010	275.0	27.5	0.275	0.110
37.5	3.8	0.038	0.015	287.5	28.8	0.288	0.115
50.0	5.0	0.050	0.020	300.0	30.0	0.300	0.120
62.5	6.3	0.063	0.025	312.5	31.3	0.313	0.125
75.0	7.5	0.075	0.030	325.0	32.5	0.325	0.130
87.5	8.8	0.088	0.035	337.5	33.8	0.338	0.135
100.0	10.0	0.100	0.040	350.0	35.0	0.350	0.140
112.5	11.3	0.113	0.045	362.5	36.3	0.363	0.145
125.0	12.5	0.125	0.050	375.0	37.5	0.375	0.150
137.5	13.8	0.138	0.055	387.5	38.8	0.388	0.155
150.0	15.0	0.150	0.060	400.0	40.0	0.400	0.160
162.5	16.3	0.163	0.065	412.5	41.3	0.413	0.165
175.0	17.5	0.175	0.070	425.0	42.5	0.425	0.170
187.5	18.8	0.188	0.075	437.5	43.8	0.438	0.175
200.0	20.0	0.200	0.080	450.0	45.0	0.450	0.180
212.5	21.3	0.213	0.085	462.5	46.3	0.463	0.185
225.0	22.5	0.225	0.090	475.0	47.5	0.475	0.190
237.5	23.8	0.238	0.095	487.5	48.8	0.488	0.195
250.0	25.0	0.250	0.100	500.0	50.0	0.500	0.200

1.10 Checking the Version

The EOS D60 has version numbers for two software programs.
<Camera section>(Main board unit) ROM Version(1603)
<Digital back section>(Digital board unit) Firmware (1.0.0.)

* The version number in parentheses applies to the initial production lot.

The digital back version can be checked with the TFT monitor. However, minor versions cannot. (They are uploaded without informing the user due to manufacturing or servicing circumstances.) To check the minor versions, the digital back adjustment software is necessary. They will appear at the bottom of the main menu.



1.11 SPC Positioning Adjustment

The SPC positioning adjustment can be done with or without the adjustment software. If you do not use the software, you will need a small flashlight and very refined servicing skills. The procedure without the adjustment software is explained below.

<Required tools>

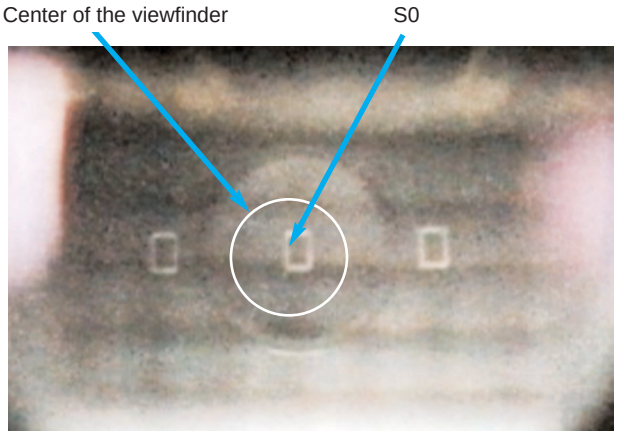
Bright penlight
Normal EF 50mm f/1.8 lens
Aron Alpha

<Preparation>

1) Attach the EF 50mm f/1.8 lens to the camera.
2) Cover the viewfinder with your hand matching the AF centering range. Illuminate the side (the clear portion) of the SPC with the flashlight.
3) Look through the lens, and move the flashlight so that you can see the SPC's S0 and the border lines. It would be best if you cover the viewfinder so that the AF point at the center looks dim. Also, if the flashlight is fixed in place, it will be easier to move the SPC.

<Adjustment Procedure>

1) Move the SPC so that the SPC's S0 is aligned with the AF point at the center of the viewfinder.
2) Do fine adjustments so that the left and right AF points are centered as well.



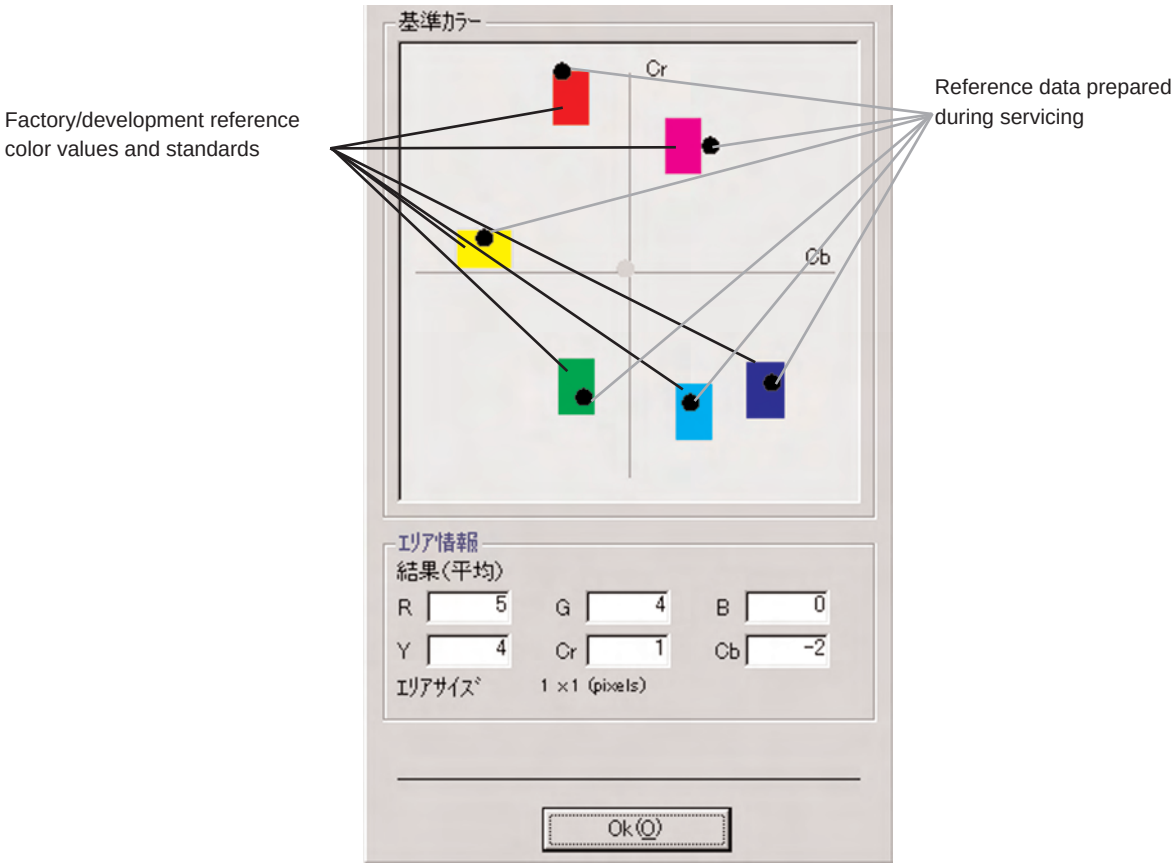
1.12 Color Matrix Adjustment

Color matrix adjustment is a very important adjustment in determining "color" on EOS D60.

However, as unevenness in the "color" of the color chart used at adjustment is reflected on the camera as it is, color matrix basic data and reference data must be made by "1.5 Description of Digital Section Electrical Adjustments, preparing basic data."

<Description>

The following is displayed by evaluating the image during image checking and color matrix adjustment.



When color matrix reference data is prepared, some points may not coincide with the factory reference color values and standards. This is because a difference occurs between the factory color bar charts and individual color bar charts. For this reason, the color may differ from the actual color when adjustments are performed matched to the factory reference color values and standards.

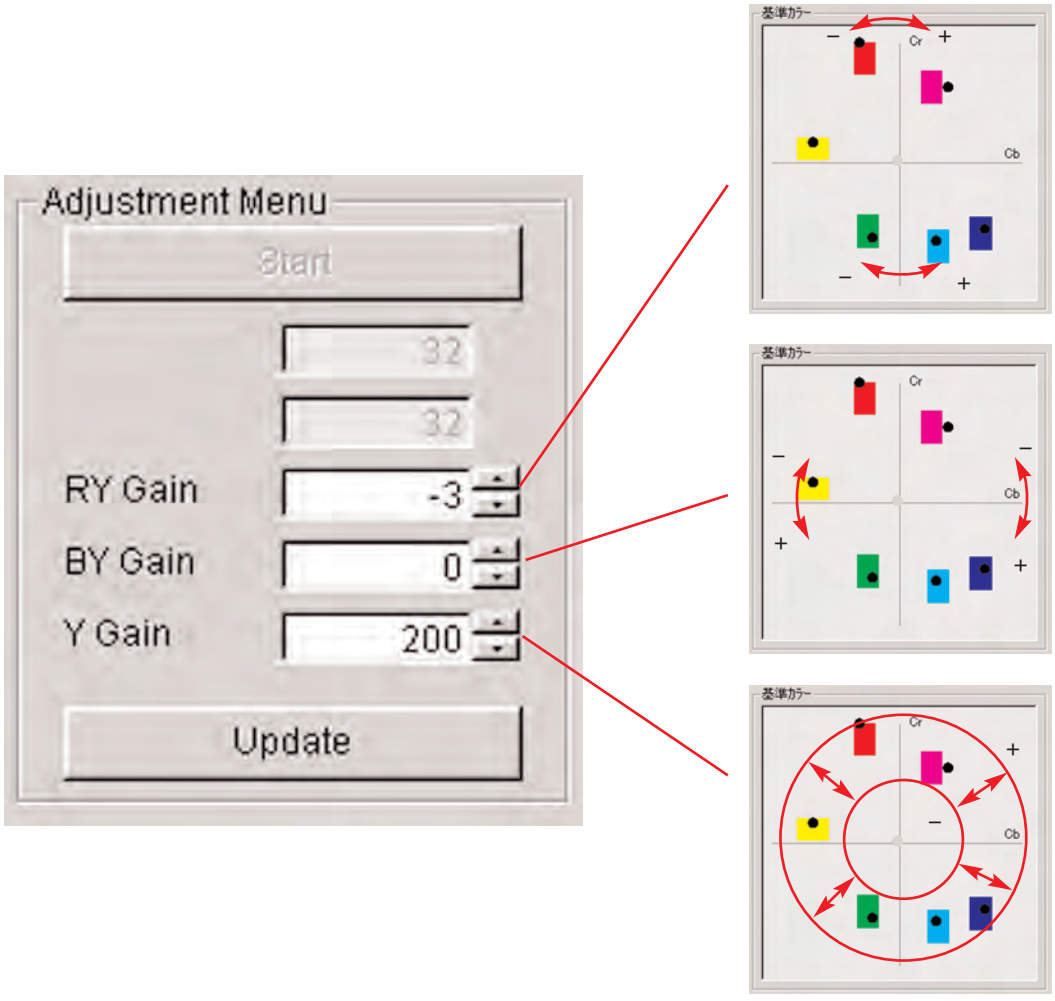
During color matrix adjustment, the color is matched to the reference data prepared during servicing. As a guideline for the standard values, the factory reference color values and standard ranges are shifted centrally to the reference data prepared during servicing for judgment.

<Adjustment Method>

If reference data is already made, the adjustment itself is completed by "Setting" -> "Start adjustment". Note, however, that to respond to user preferences (e.g. stronger red, blue is too predominant), reference data must be changed, re-adjusted, and checked.

CAUTION

Before changing the reference data, be sure to record the original values. Once reference data is changed, the original values are overwritten.
"Color" drawn in the graph changes according to the overall exposure level. For this reason, offset exposure during measurement so that the "Y" level of white on the color bar becomes 225±10 counts. (This is the same as color matrix basic data and reference data made by "1.3 Description of Camera's Electrical Adjustments".)



1.13 Storing Settings and Adjustment Data

The following tables summarize where the various setup data and adjustment data are saved, and how to save the data. Refer to these tables when saving data.

* Setup Data

Setup Data	Storage Location	Save Method
C.Fn (custom function)	Camera (MPU)	Camera section or TWAIN driver
Image review time	Digital section (RAM)	Not possible
Red-eye reduction function time	Camera	Camera section
AEB setting	Camera	Camera section
ISO sensitivity	Camera	Camera section
LCD panel illumination	Digital section (RAM)	Not possible
Beep	Camera	Camera section
LCD monitor brightness	Digital section (RAM)	Not possible
Video system	Digital section (flash ROM)	Digital section
Time	Camera (RTC)	Not possible
Owner name	Digital section (RAM)	Not possible
Development parameters	Digital section (RAM)	Not possible
Image-recording quality	Digital section (RAM)	Not possible
Auto-power OFF	Digital section (RAM)	Not possible
Language	Digital section (flash ROM)	Digital section
Date Format	Digital section (flash ROM)	Digital section

* Camera section

Adjustment Item	Storage Location	Save Method
SPC positioning	None	Camera section
AE adjustment	MPU	Camera section
AE shift	MPU	Camera section
Change exposure program	MPU	Camera section
AF basic adjustment		Camera section
AF focus adjustment	MPU	Camera section
Image data output	None	Camera section
Focus data output	None	Camera section
E-TTL gain shift	MPU	Camera section
E-TTL level shift	MPU	Camera section
SI brightness adjustment	MPU	Camera section
Light all LCDs	None	Camera section
Erase error code	MPU	Camera section
Temperature adjustment	MPU	Camera section
Shot counter reset	MPU	Camera section
Version/Error code	MPU	Camera section

Digital Section

Adjustment Item	Storage Location	Save Method
Imager file transfer	Digital section (flash ROM)	Digital section
Camera ID writing	Digital section (flash ROM)	Digital section
CMOS sensitivity adjustment	Digital section (flash ROM)	Digital section
White balance adjustment	Digital section (flash ROM)	Digital section
Color matrix adjustment	Digital section (flash ROM)	Digital section
White balance sensor adjustment	Digital section (flash ROM)	Digital section
TFT board data transfer	Digital section (flash ROM)	Digital section
TFT position adjustment	Digital section (flash ROM)	Digital section
TFT brightness adjustment	Digital section (flash ROM)	Digital section

1.14 Defragmenting the Adjustment Area

CAUTION

The procedure is same as updating the firmware. Be sure to turn off "Auto Power Off." If the power turns off during the adjustment, an error may occur.
When the defragmentation of the adjustment of adjustment area is done, the data will not to be deleted.

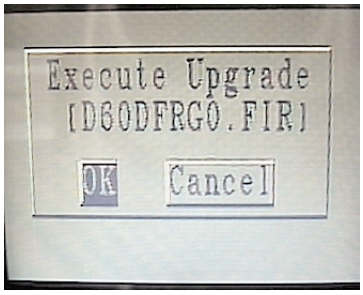
The adjustment data of the digital back section is memorized to the flash ROM of the digital board. Since the memory will be written into a blank area accordingly, after number of adjustments, there will be no space left to write. It is necessary to change the arrangements of the adjustment data and make space to write. The "D60dfrg0.fir" program does this job.

Defragmentation of the adjustment area is necessary under these conditions:

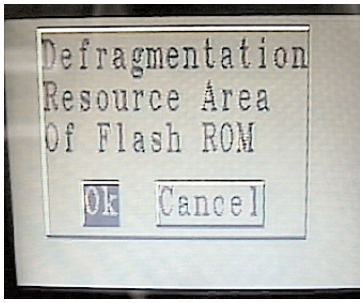
- The adjustment software recommends to do so. (initializing the digital back, transfering data, transferring an imager file)
- The Error message comes up during the adjustment.

<Procedure>

1) Copy the "D60dfrg0.fir" file to CF card.
   Follow the procedure as same as updating the firmware.
2) Insert the CF card.
3) When close the CF card cover, the screen shown on the right will appear.
4) Choose OK and press "SET".



5) Choose OK and press "SET" again. Wait until the percentage displayed becomes 100%.



6) When it is done, the power will be turned off.

Part 5

Parts Catalog

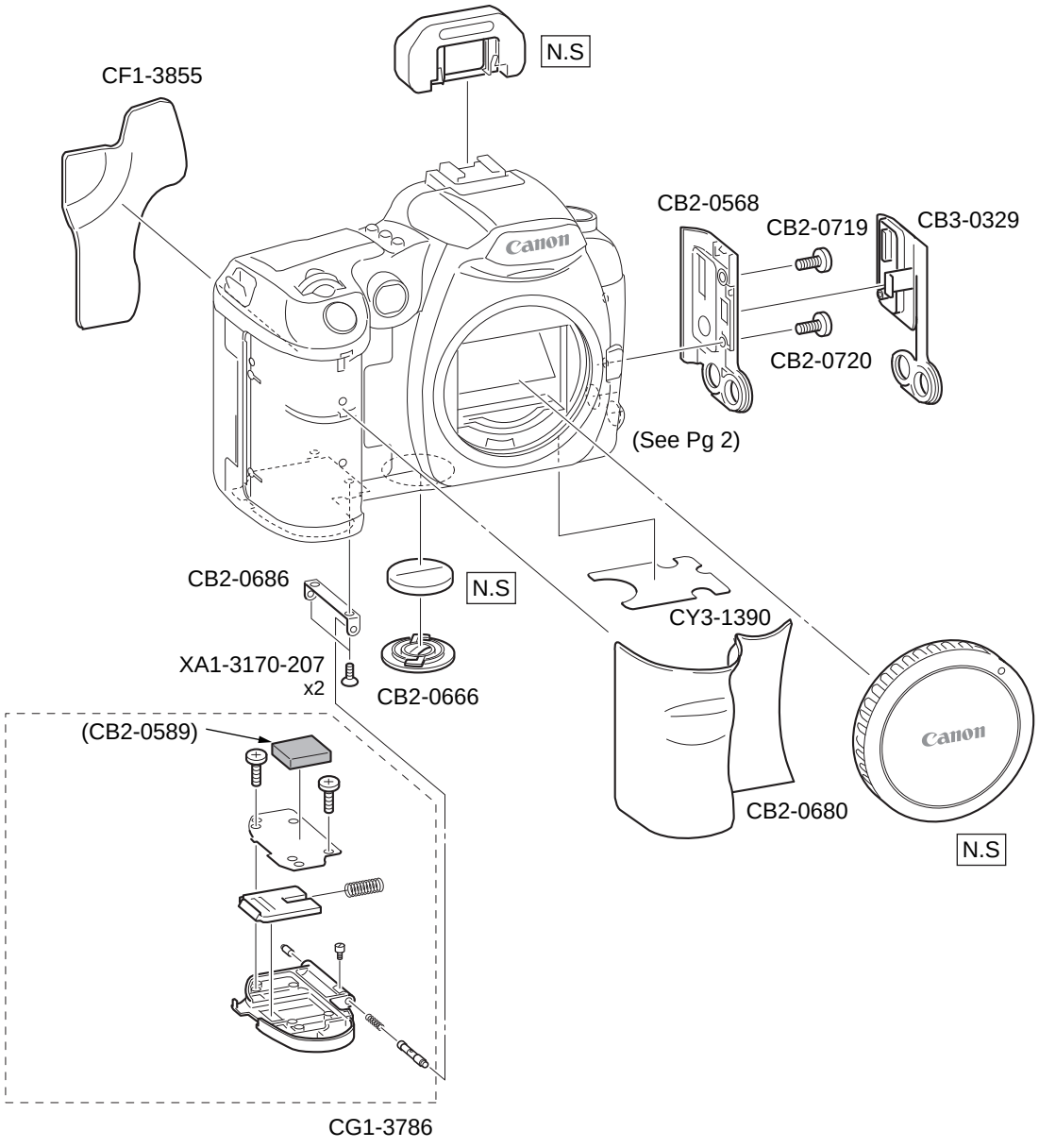
Canon

EOS D60 **REF.NO.C12-6011**

PARTS CATALOG

1

CANON DIGITAL CAMERA EOS D60



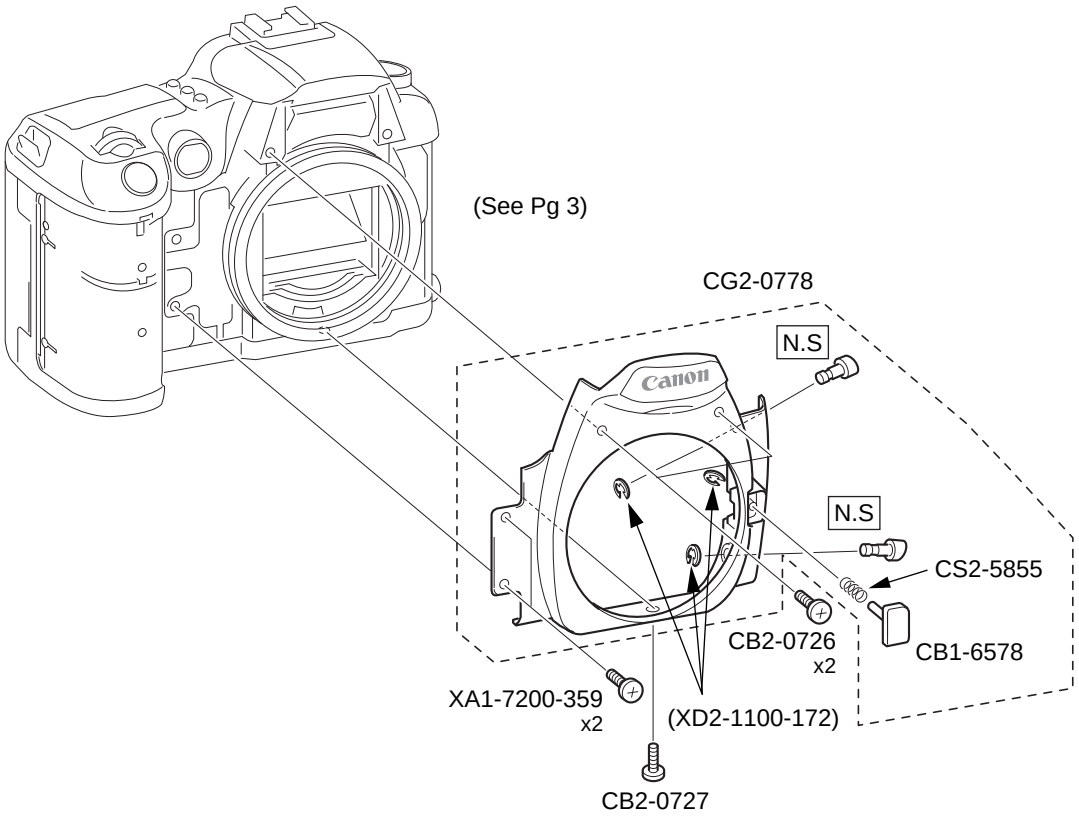
P A R T S L I S T

REF.NO. C12-6011

NEW	PARTS No	CLASS	QTY	DESCRIPTION
	CB2-0568-000	C	1	COVER, DIGITAL TERMINAL
	CB2-0589-000	C	1	CUSHION
	CB2-0666-000	C	1	COVER, DATE BATTERY
	CB2-0680-000	B	1	RUBBER, GRIP
	CB2-0686-000	C	1	HINGE, B-DOOR
	CB2-0719-000	C	1	SCREW M17X5.5
	CB2-0720-000	C	1	SCREW M17X6
*	CB3-0329-000	B	1	CAP, DIGITAL TERMINAL
	CF1-3855-000	B	1	RUBBER, BACK
	CG1-3786-000	B	1	DOOR ASS'Y, MAIN BATTERY
*	CY3-1390-000	B	1	PLATE, NAME
	XA1-3170-207	F	2	SCREW M17X2

2

CANON DIGITAL CAMERA EOS D60

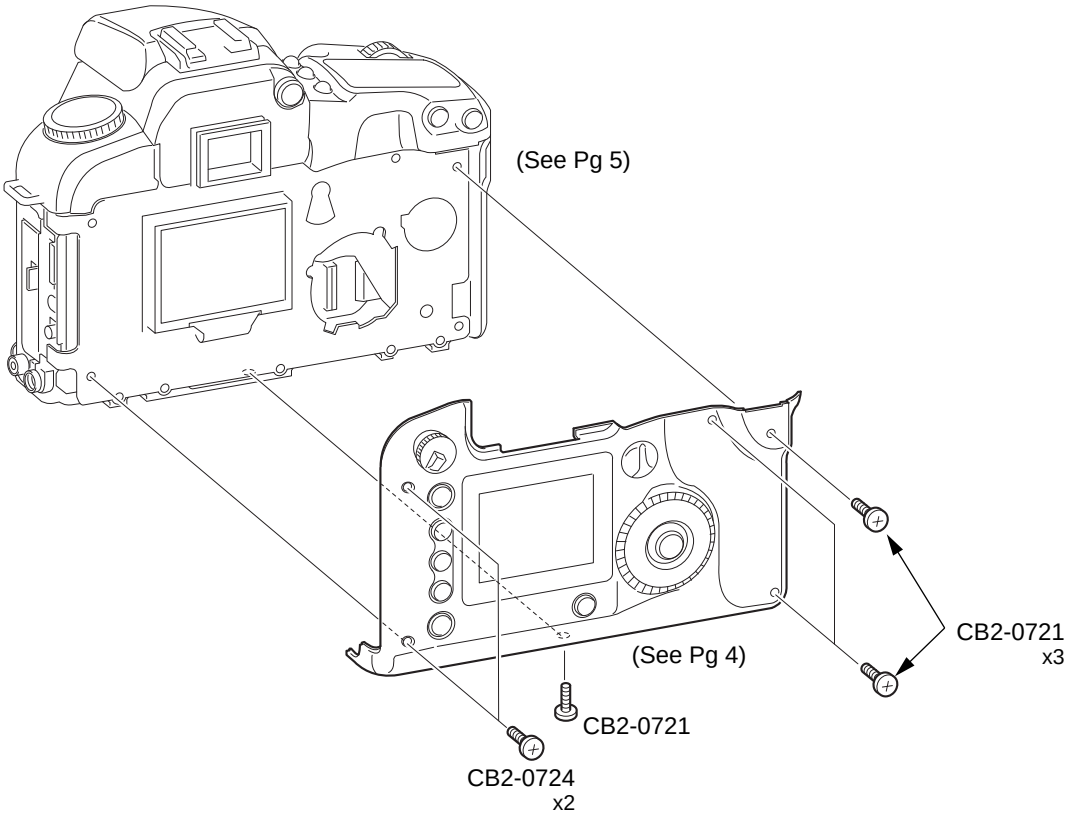


REF.NO. C12-6011

NEW	PARTS No	CLASS	QTY	DESCRIPTION
	CB1-6578-000	C	1	BUTTON, UNLOCK
	CB2-0726-000	C	2	SCREW M17X5.5
	CB2-0727-000	C	1	SCREW M17X4.5
*	CG2-0778-000	B	1	COVER ASS'Y, FRONT
	CS2-5855-000	E	1	SPRING, UNLOCK BUTTON
	XA1-7200-359	F	2	SCREW M2X3.5
	XD2-1100-172	F	2	E RING

3

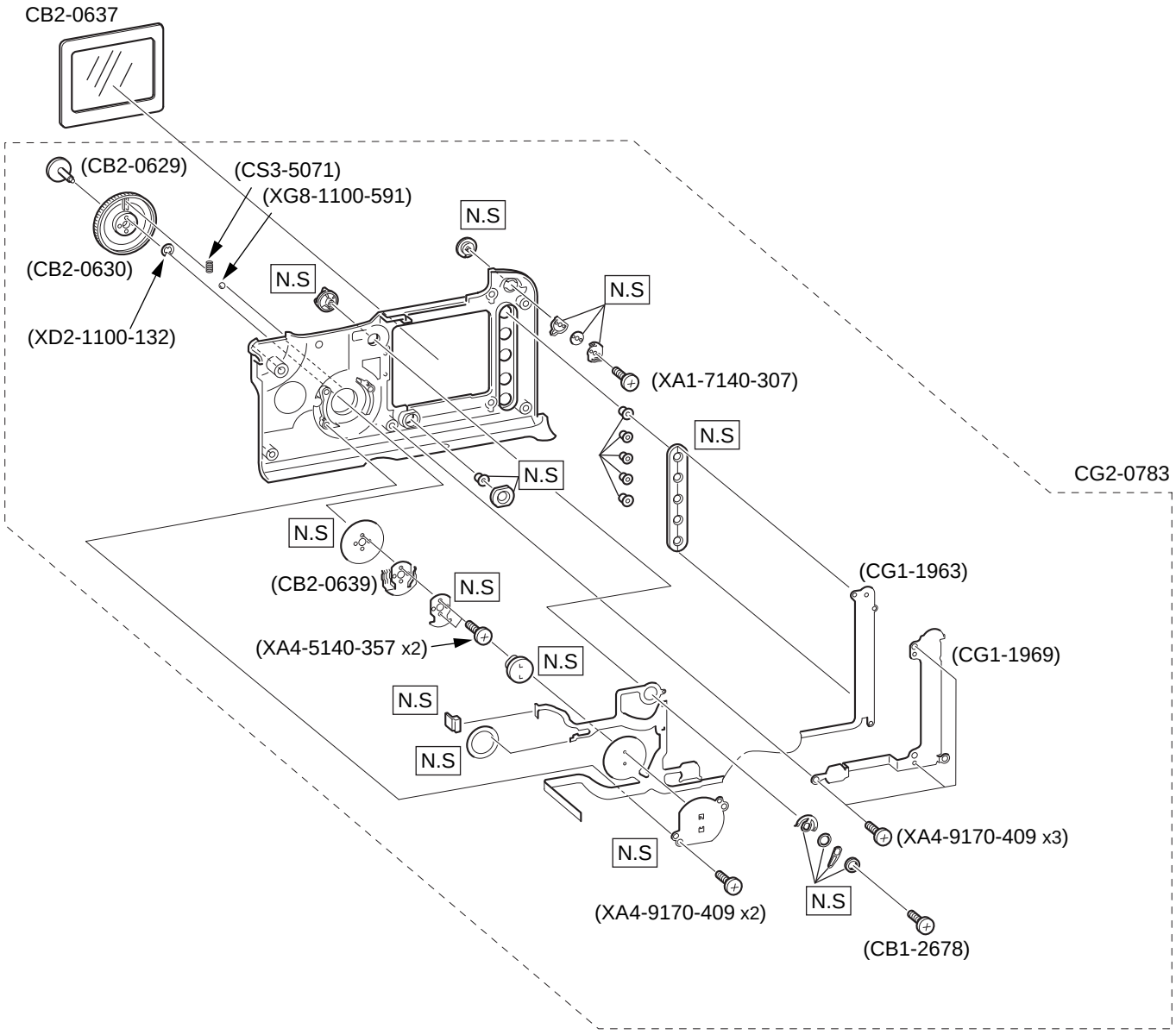
CANON DIGITAL CAMERA EOS D60



REF.NO. C12-6011

NEW	PARTS No	CLASS	QTY	DESCRIPTION
	CB2-0721-000	C	4	SCREW M17X2.5
	CB2-0724-000	C	2	SCREW M17X4.5

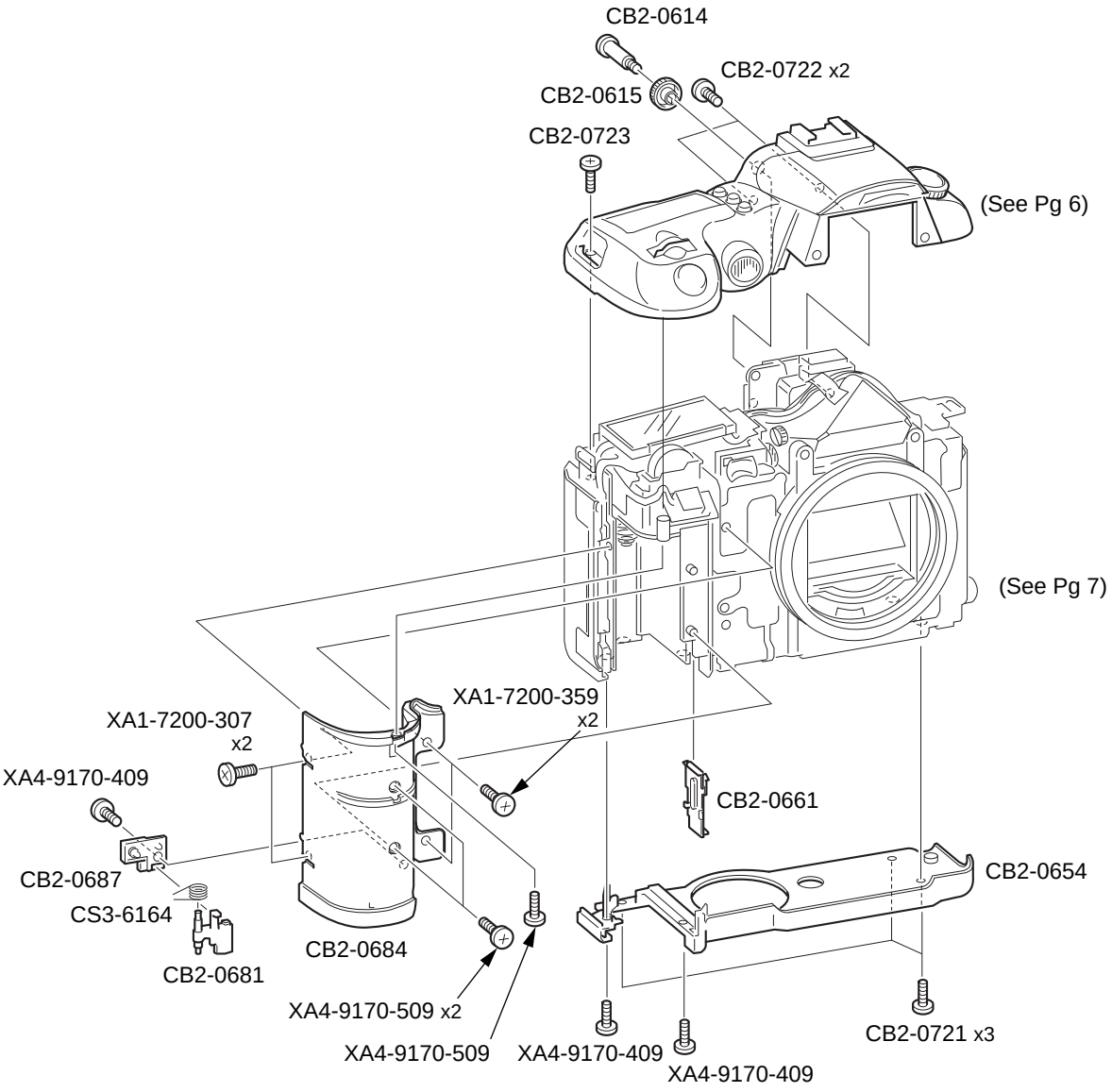
CANON DIGITAL CAMERA EOS D60



REF.NO. C12-6011

NEW	PARTS No	CLASS	QTY	DESCRIPTION
	CB1-2678-000	C	1	SCREW M17X2.5
	CB2-0629-000	C	1	BUTTON, BC DIAL
	CB2-0630-000	C	1	DIAL, BACK COVER
	CB2-0637-000	B	1	WINDOW, TFT LCD
	CB2-0639-000	C	1	CONTACT, BC DIAL
	CG1-1963-000	C	1	FPC ASS'Y, BUZZER
	CG1-1969-000	C	1	FPC ASS'Y, BACK COVER
*	CG2-0783-000	B	1	COVER ASS'Y, BACK
	CS3-5071-000	C	1	SPRING, COIL
	XA1-7140-307	F	1	SCREW M14X3
	XA4-5140-357	F	2	SCREW M14X3.5
	XA4-9170-409	F	5	SCREW M17x4
	XD2-1100-132	F	1	E RING
	XG8-1100-591	F	1	BALL, STEEL

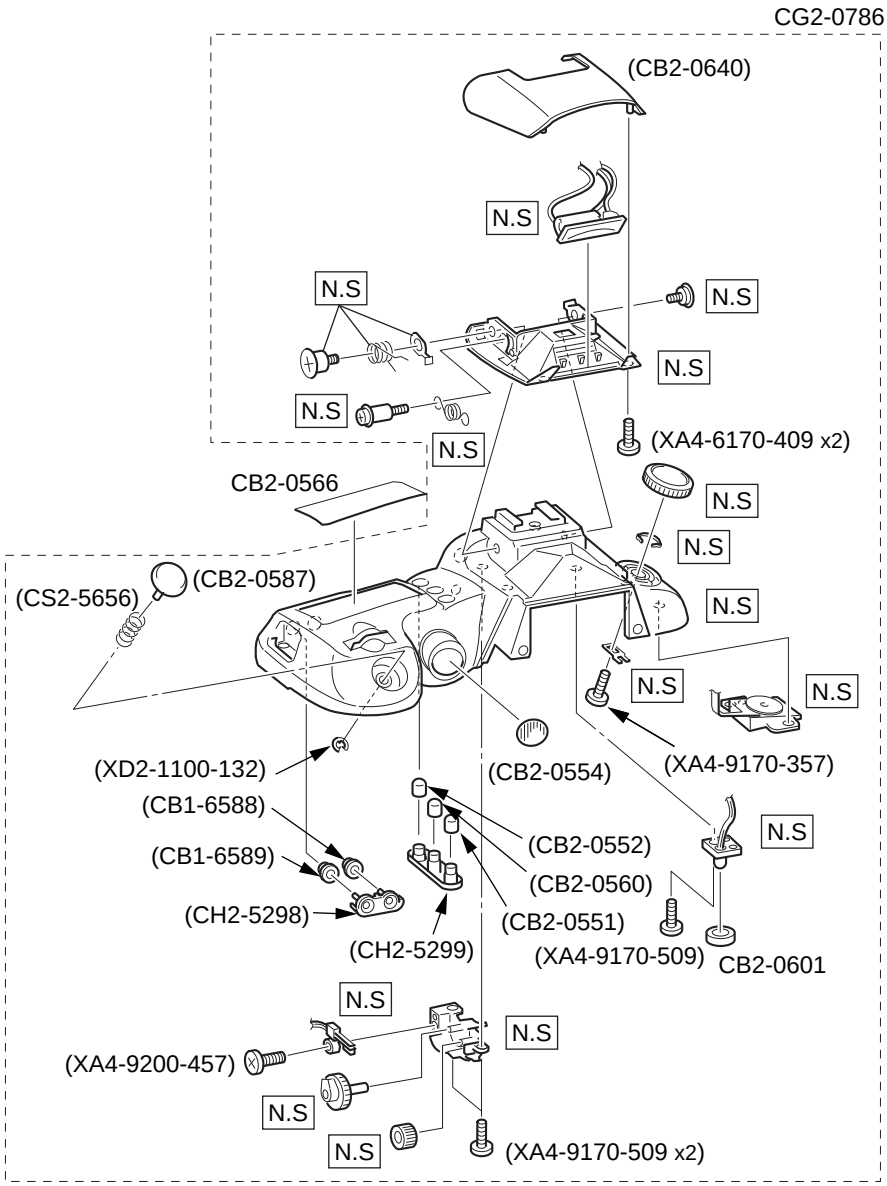
CANON DIGITAL CAMERA EOS D60



REF.NO. C12-6011

NEW	PARTS No	CLASS	QTY	DESCRIPTION
	CB2-0614-000	C	1	SCREW, STEP
	CB2-0615-000	C	1	KNOB, DIOPTOR ADJ.
	CB2-0654-000	B	1	COVER, BOTTOM
	CB2-0661-000	C	1	DOOR, CABLE
	CB2-0681-000	C	1	LEVER, B-LOCK
	CB2-0684-000	C	1	GRIP
	CB2-0687-000	C	1	PLATE, B-LOCK
	CB2-0721-000	C	3	SCREW M17X2.5
	CB2-0722-000	C	2	SCREW M17X5
	CB2-0723-000	C	1	SCREW M2X6.5
	CS3-6164-000	C	1	SPRING, B-LOCK
	XA1-7200-307	F	2	SCREW M2X3
	XA1-7200-359	F	2	SCREW M2X3.5
	XA4-9170-409	F	3	SCREW M17x4
	XA4-9170-509	F	3	SCREW M17X5

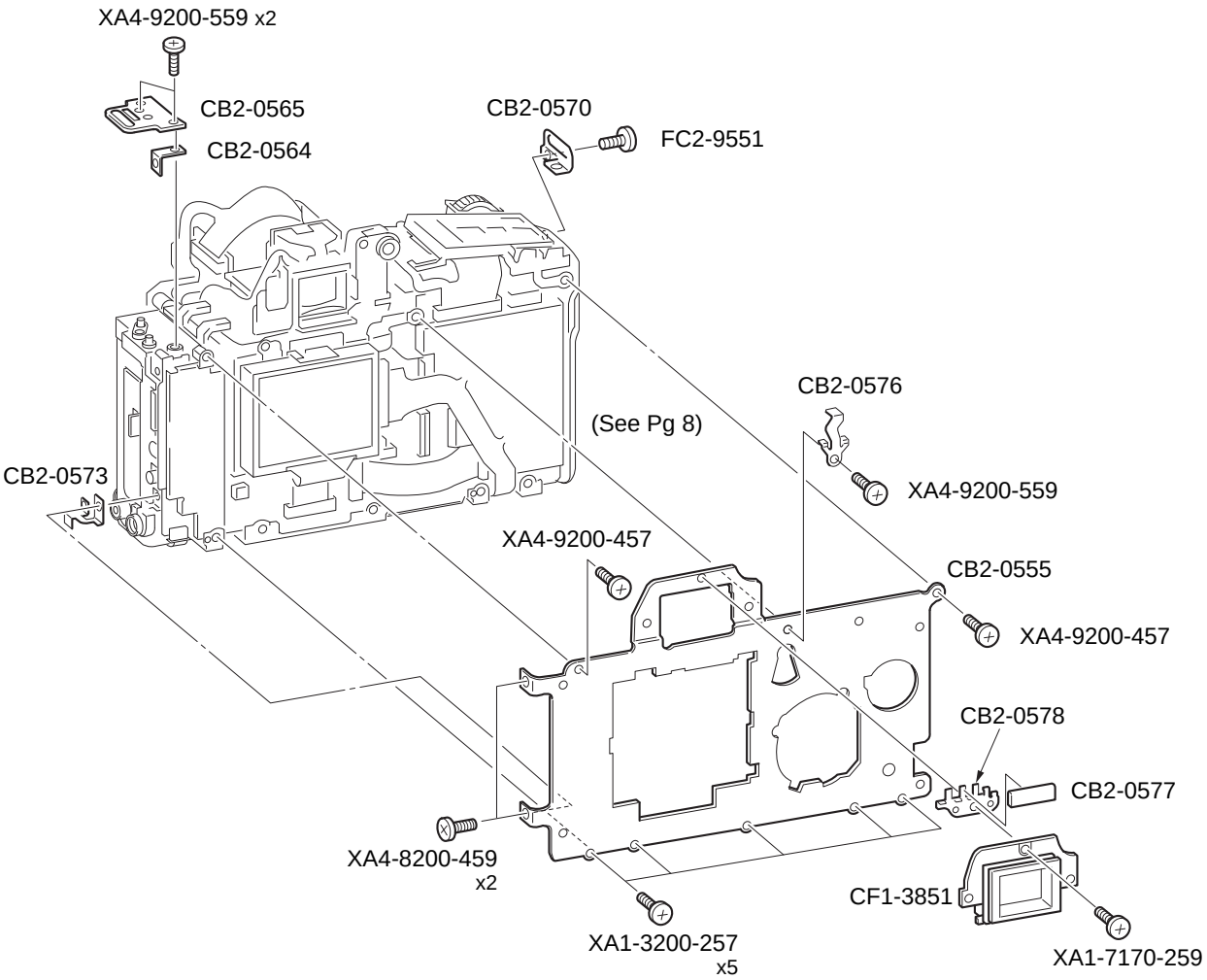
CANON DIGITAL CAMERA EOS D60



REF.NO. C12-6011

NEW	PARTS No	CLASS	QTY	DESCRIPTION
	CB1-6588-000	C	1	BUTTON, AE-LOCK
	CB1-6589-000	C	1	BUTTON, AF-SELECT
	CB2-0551-000	C	1	BUTTON, AE MODE
	CB2-0552-000	C	1	BUTTON, AF MODE
	CB2-0554-000	C	1	WINDOW, SUPPORT LIGHT
	CB2-0560-000	C	1	BUTTON, DRIVE
	CB2-0566-000	B	1	WINDOW, LCD DISPLAY
	CB2-0587-000	C	1	BUTTON, RELEASE
	CB2-0601-000	C	1	CUSHION, FIBER
	CB2-0640-000	B	1	COVER, SP LIGHT
*	CG2-0786-000	C	1	COVER ASS'Y, TOP
	CH2-5298-000	C	1	CONTACT, AE/AF SWITCH
	CH2-5299-000	C	1	CONTACT, TOP SWITCH
	CS2-5656-000	C	1	SPRING, COIL
	XA4-6170-409	F	2	SCREW M17X4
	XA4-9170-357	F	1	SCREW M17X3.5
	XA4-9170-509	F	3	SCREW M17X5
	XA4-9200-457	F	1	SCREW M2X4.5
	XD2-1100-132	F	1	E RING

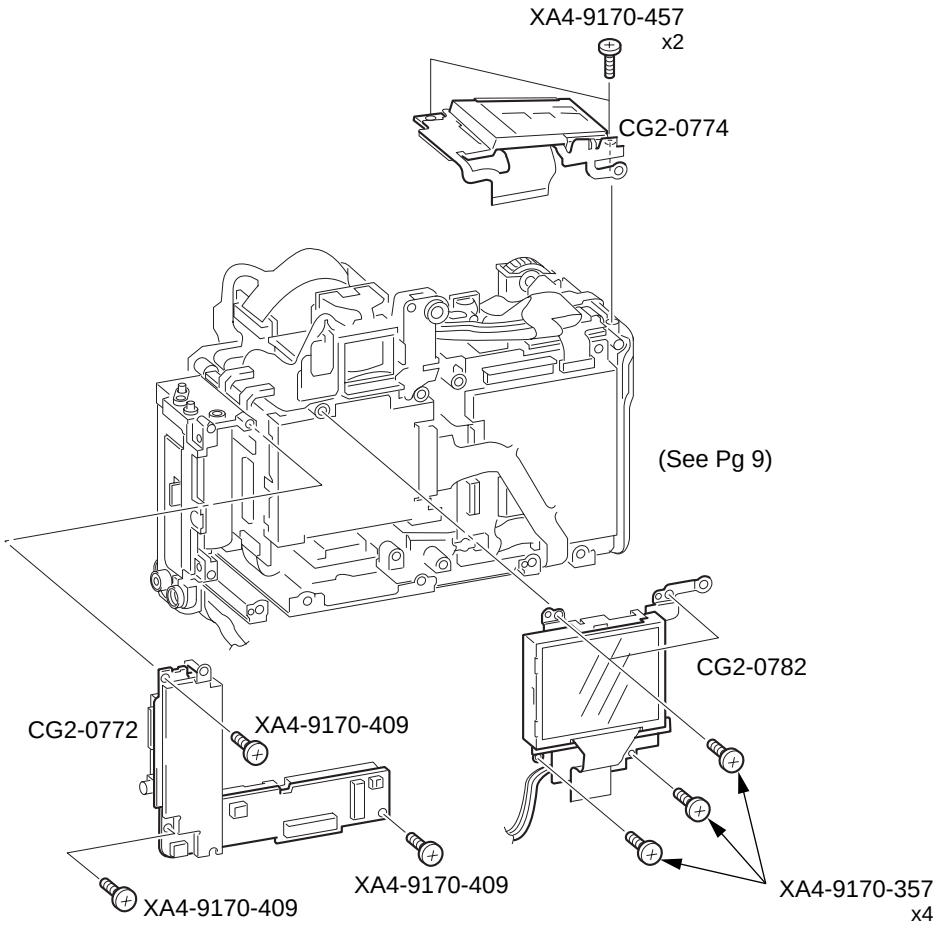
CANON DIGITAL CAMERA EOS D60



REF.NO. C12-6011

NEW	PARTS No	CLASS	QTY	DESCRIPTION
	CB2-0555-000	C	1	FRAME, REAR
	CB2-0564-000	C	1	RAG, NECK
	CB2-0565-000	C	1	HOLDER, STRAP L
	CB2-0570-000	C	1	HOLDER, STRAP R
	CB2-0573-000	C	1	RAG, REMOTE
	CB2-0576-000	C	1	RAG, DISPLAY SUPPORT
	CB2-0577-000	C	1	SHEET, SHIELD
	CB2-0578-000	C	1	HOLDER, SHIELD SHEET
	CF1-3851-000	C	1	COVER ASS'Y, EYEPIECE
	FC2-9551-000	C	1	SCREW M2X2.5
	XA1-3200-257	F	5	SCREW M2X2.5
	XA1-7170-259	F	1	SCREW M17X2.5
	XA4-8200-459	F	2	SCREW M2X4.5
	XA4-9200-457	F	2	SCREW M2X4.5
	XA4-9200-559	F	3	SCREW M2X5.5

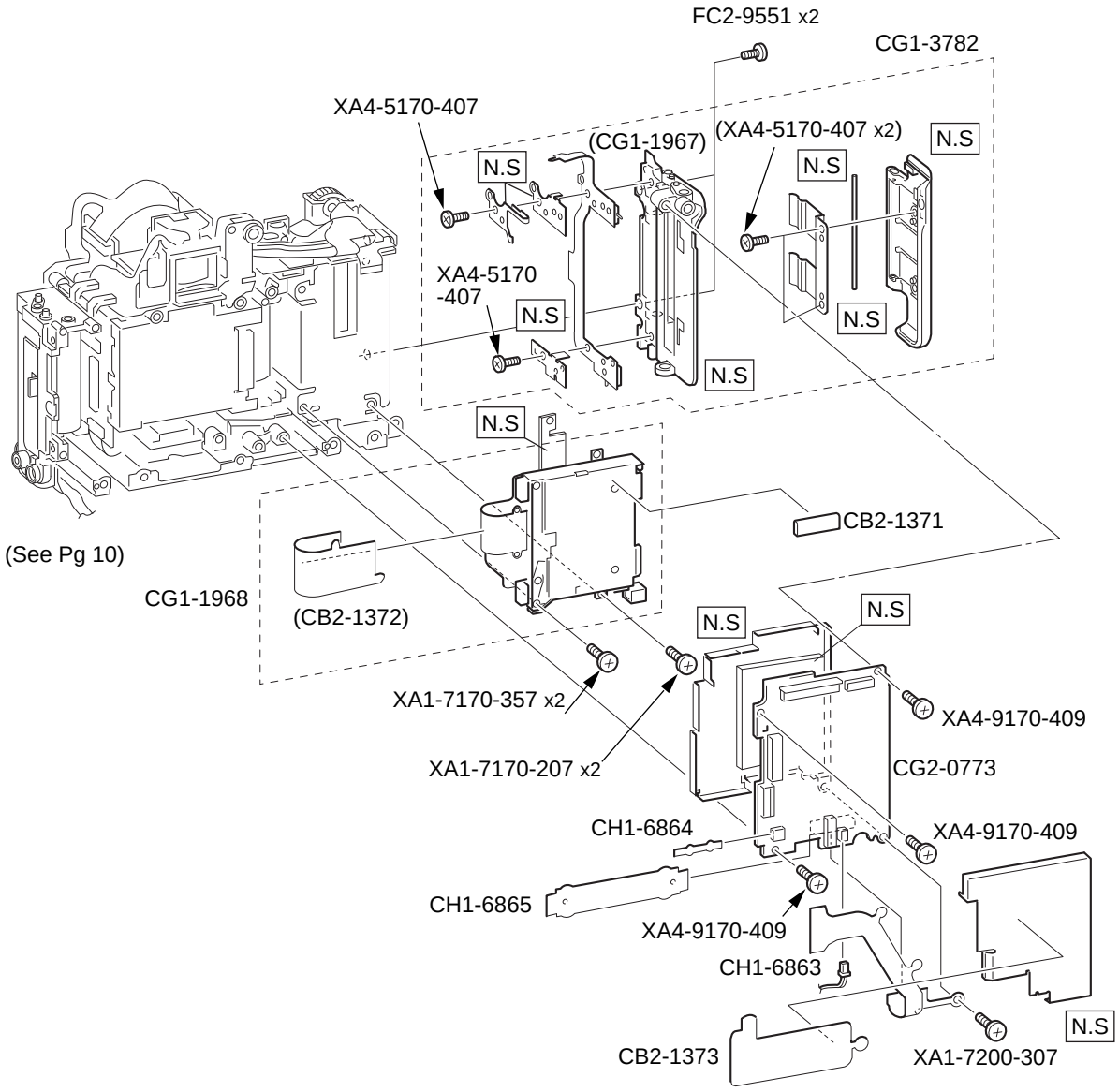
CANON DIGITAL CAMERA EOS D60



REF.NO. C12-6011

NEW	PARTS No	CLASS	QTY	DESCRIPTION
*	CG2-0772-000	C	1	PCB ASS'Y, TFT
*	CG2-0774-000	C	1	OLC DISPLAY ASS'Y
*	CG2-0782-000	C	1	TFT LCD ASS'Y (STN)
	XA4-9170-357	F	4	SCREW M17X3.5
	XA4-9170-409	F	3	SCREW M17x4
	XA4-9170-457	F	2	SCREW M17X4.5

CANON DIGITAL CAMERA EOS D60



REF.NO. C12-6011

NEW	PARTS No	CLASS	QTY	DESCRIPTION
	CB2-1371-000	C	1	CUSHION
	CB2-1372-000	C	1	SHEET, SHIELD
	CB2-1373-000	C	1	SHEET, SHIELD
	CG1-1967-000	C	1	FPC ASS'Y, DOOR DET.SWITCHES
	CG1-1968-000	C	1	FPC ASS'Y CF
	CG1-3782-000	B	1	COVER ASS'Y, RIGHT SIDE
*	CG2-0773-000	C	1	PCB ASS'Y, DIGITAL
	CH1-6863-000	C	1	FPC (ANALOG-DIGITAL)
	CH1-6864-000	C	1	FPC (DIGITAL-TFT)
	CH1-6865-000	C	1	FPC (DIGITAL-CAMERA MAIN)
	FC2-9551-000	C	2	SCREW M2X2.5
	XA1-7170-207	F	2	SCREW M17X2
	XA1-7170-357	F	2	SCREW M17X3.5
	XA1-7200-307	F	1	SCREW M2X3
	XA4-5170-407	F	4	SCREW M17X4
	XA4-9170-409	F	3	SCREW M17x4

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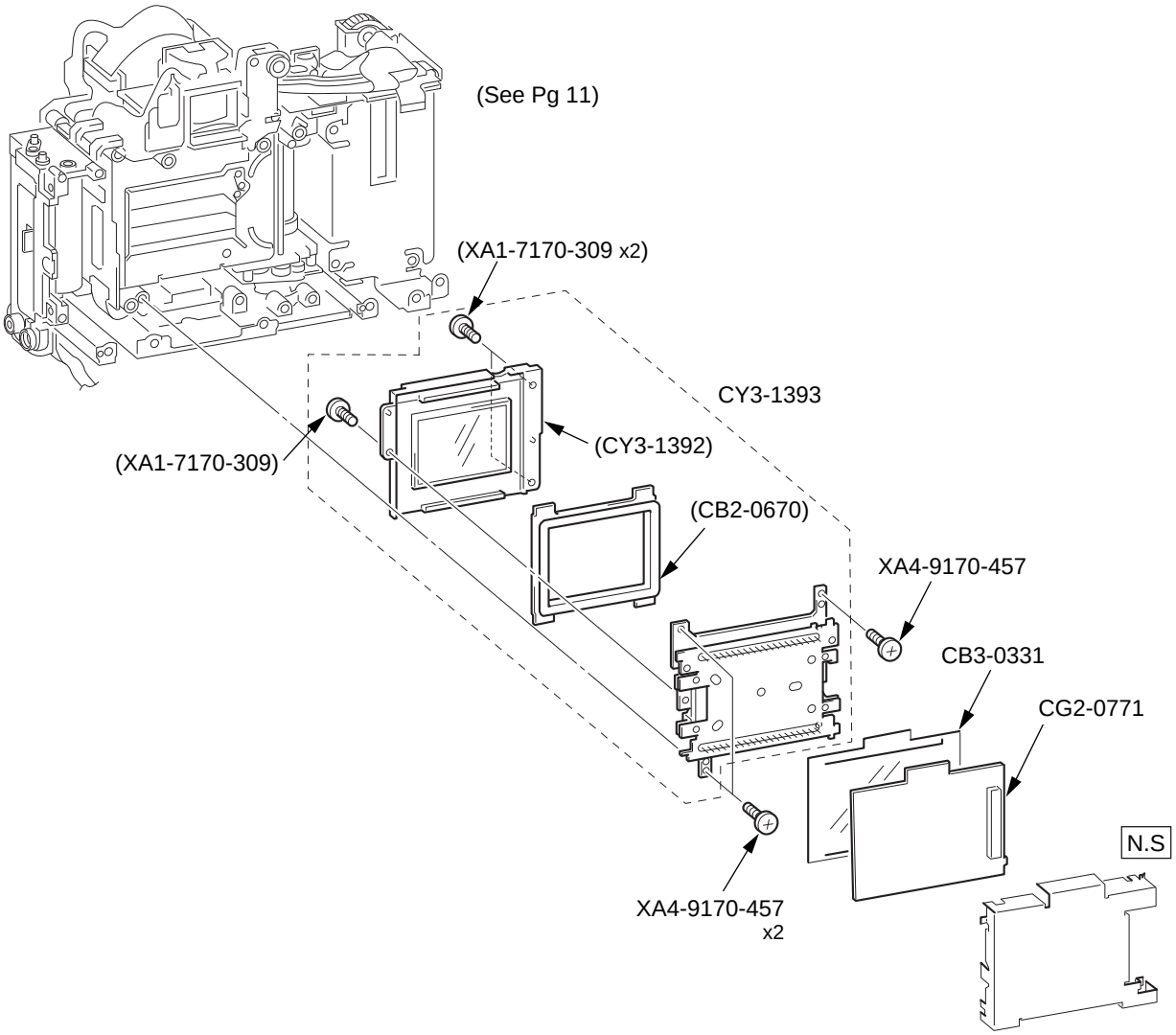
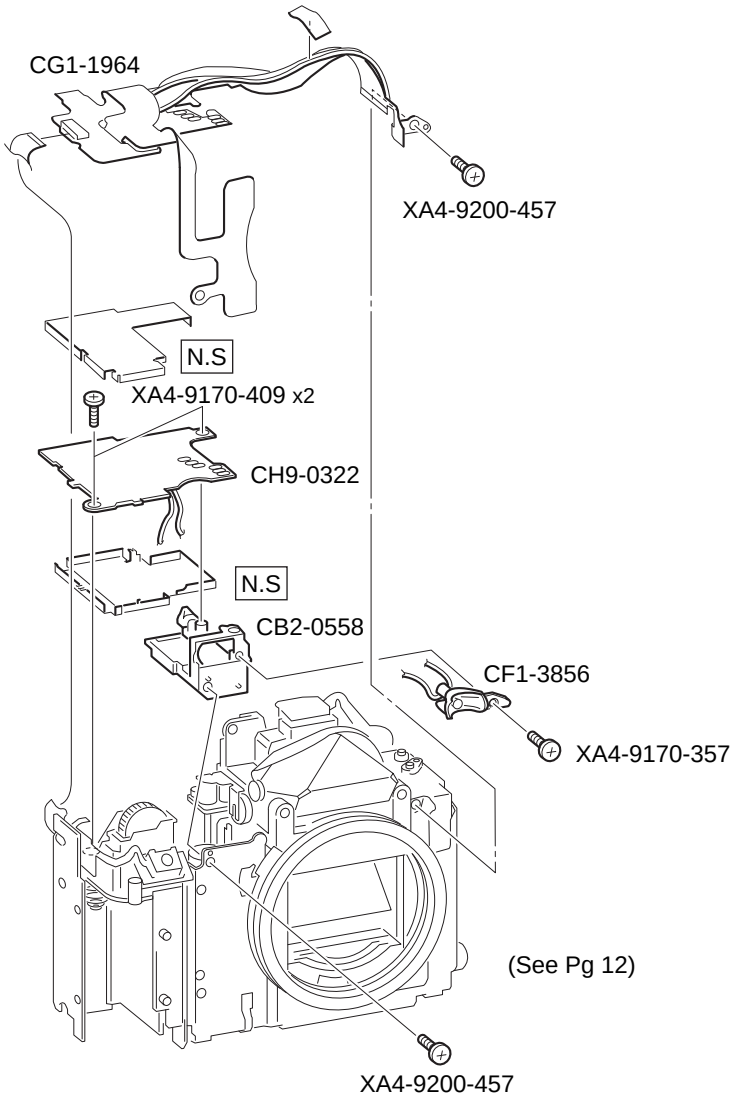
CANON DIGITAL CAMERA EOS D60



REF.NO. C12-6011

NEW	PARTS No	CLASS	QTY	DESCRIPTION
	CB2-0670-000	C	1	SHIELD, C-MOS RUBBER
*	CB3-0331-000	C	1	SHEET, ANALOG PCB
*	CG2-0771-000	C	1	PCB ASS'Y, ANALOG
*	CY3-1392-000	C	1	FILTER, IR/LPF
*	CY3-1393-000	C	1	C-MOS ASS'Y
	XA1-7170-309	F	3	SCREW M17X3
	XA4-9170-457	F	3	SCREW M17x4

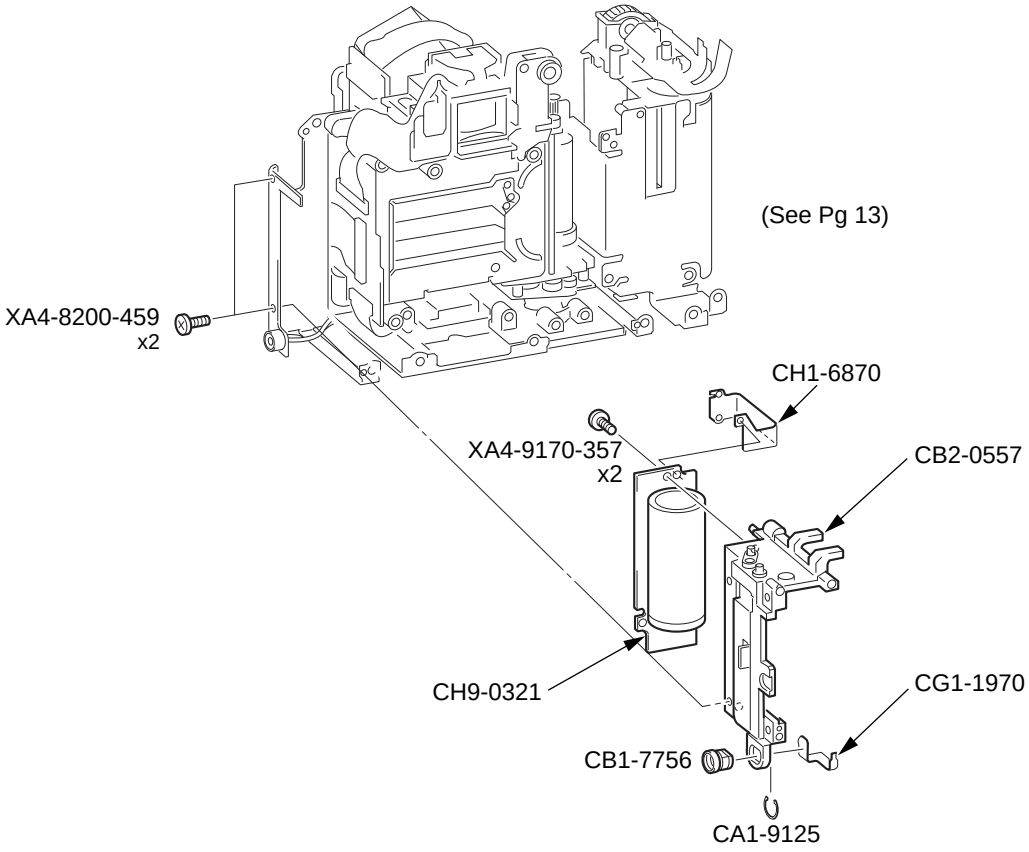
CANON DIGITAL CAMERA EOS D60



REF.NO. C12-6011

NEW	PARTS No	CLASS	QTY	DESCRIPTION
	CB2-0558-000	C	1	BODY, RIGHT
	CF1-3856-000	C	1	LAMP ASS'Y, AF SUPPORT
	CG1-1964-000	C	1	FPC ASS'Y, MD
	CH9-0322-000	C	1	PCB ASS'Y, DC/DC
	XA4-9170-357	F	1	SCREW M17X3.5
	XA4-9170-409	F	2	SCREW M17x4
	XA4-9200-457	F	2	SCREW M2X4.5

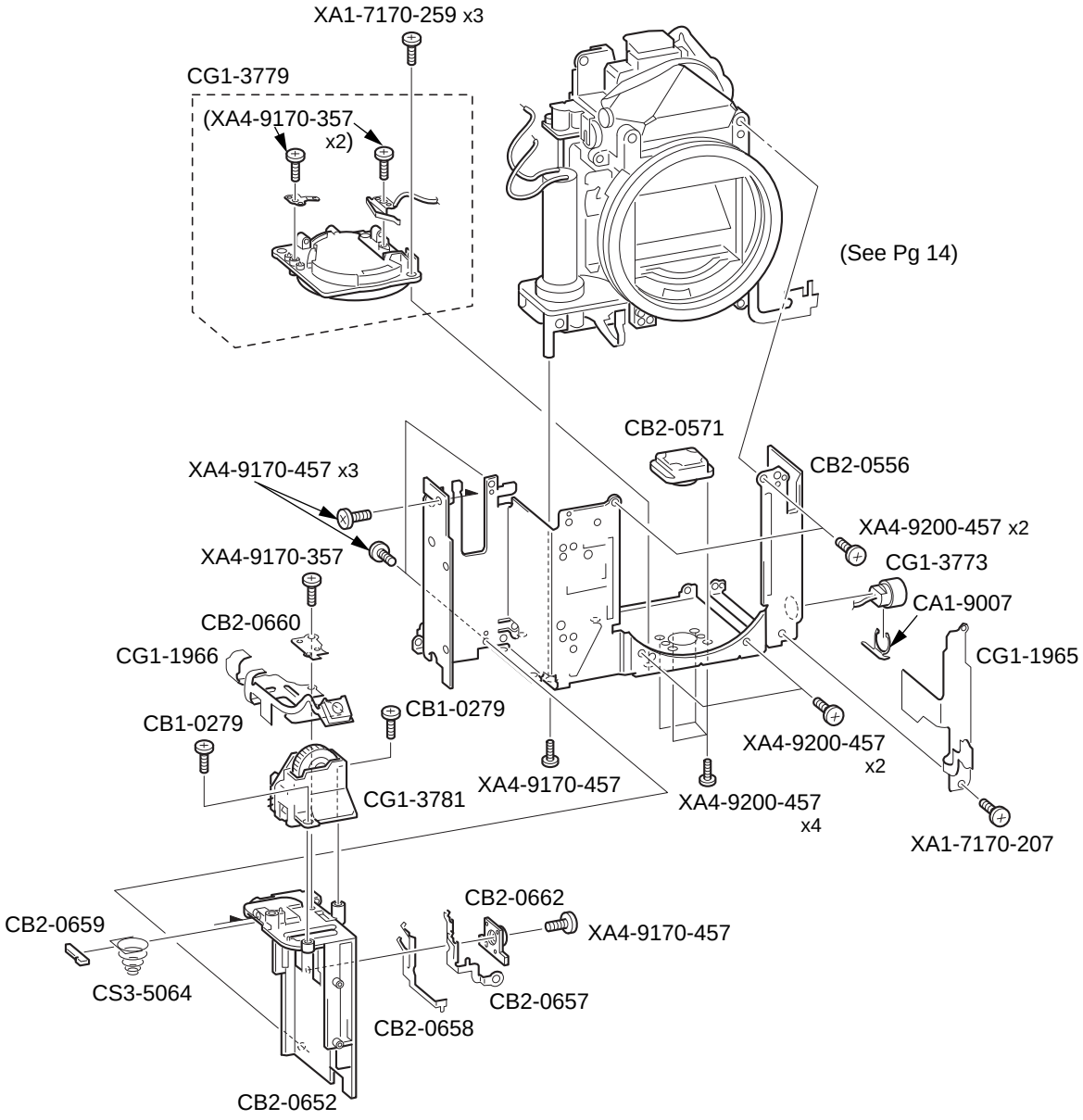
CANON DIGITAL CAMERA EOS D60



REF.NO. C12-6011

NEW	PARTS No	CLASS	QTY	DESCRIPTION
	CA1-9125-000	C	1	STOPPER, RT CONNECTOR
	CB1-7756-000	C	1	CONNECTOR, REMOTE
	CB2-0557-000	C	1	BODY, LEFT
	CG1-1970-000	C	1	FPC ASS'Y, REMOTE
	CH1-6870-000	C	1	FPC (DE-SP LIGHT)
	CH9-0321-000	C	1	PCB ASS'Y, SP LIGHT
	XA4-8200-459	F	2	SCREW M2X4.5
	XA4-9170-357	F	2	SCREW M17X3.5

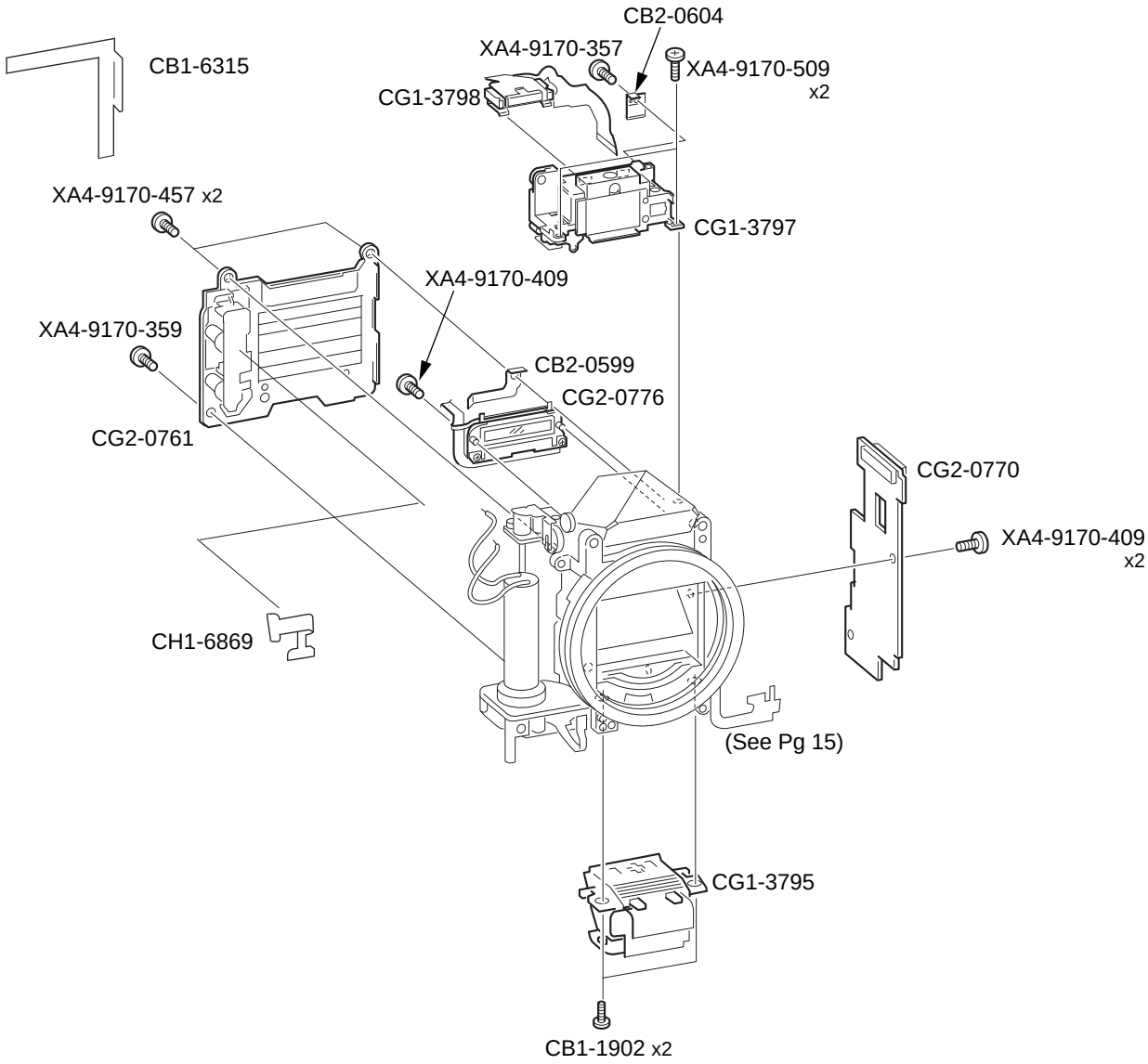
CANON DIGITAL CAMERA EOS D60



REF.NO. C12-6011

NEW	PARTS No	CLASS	QTY	DESCRIPTION
	CA1-9007-000	C	1	STOPPER, PC TERMINAL
	CB1-0279-000	C	2	SCREW M17X4.5
	CB2-0556-000	C	1	BODY, FRONT
	CB2-0571-000	C	1	SOCKET, TRIPOD
	CB2-0652-000	C	1	CASE, MAIN BATTERY
	CB2-0657-000	C	1	CONTACT, BATTERY 1
	CB2-0658-000	C	1	CONTACT, BATTERY 2
	CB2-0659-000	C	1	HOLDER, BATTERY SPRING
	CB2-0660-000	C	1	PLATE, SW HOLDER
	CB2-0662-000	C	1	HOLDER, CONTACT
	CG1-1965-000	C	1	FPC ASS'Y, FRONT
	CG1-1966-000	C	1	FPC ASS'Y, RELEASE
	CG1-3773-000	C	1	TERMINAL ASS'Y, PC
	CG1-3779-000	C	1	CASE ASS'Y, DATE BATTERY
	CG1-3781-000	C	1	MAIN DIAL ASS'Y
	CS3-5064-000	C	1	SPRING, COIL
	XA1-7170-207	F	1	SCREW M17X2
	XA1-7170-259	F	3	SCREW M17X2.5
	XA4-9170-357	F	3	SCREW M17X3.5
	XA4-9170-457	F	5	SCREW M17X4.5
	XA4-9200-457	F	8	SCREW M2X4.5

CANON DIGITAL CAMERA EOS D60

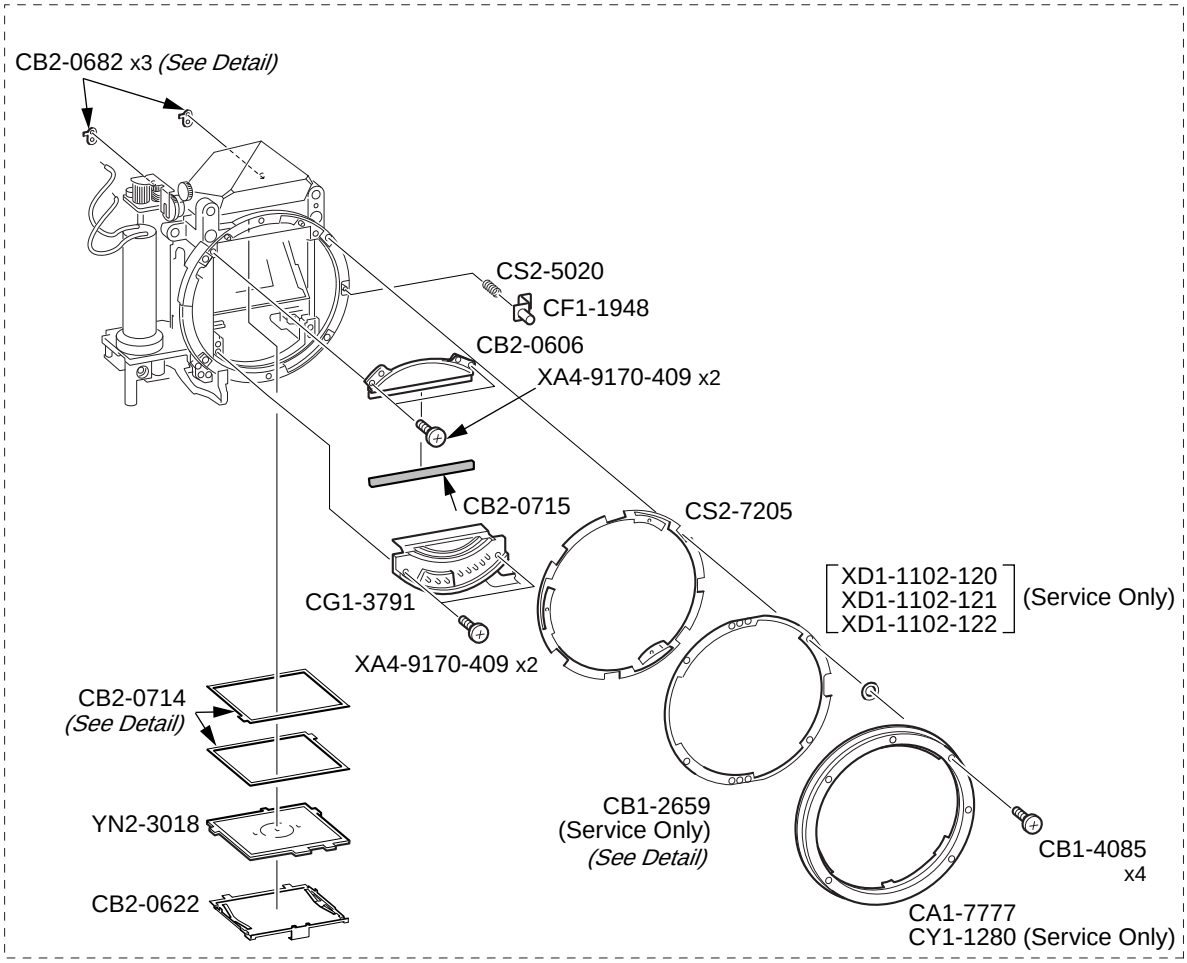


REF.NO. C12-6011

NEW	PARTS No	CLASS	QTY	DESCRIPTION
	CB1-1902-000	C	2	SCREW M17X4
*	CB1-6315-000	C	1	SHEET, SHUTTER SHADE
	CB2-0599-000	C	1	SPRING, PLATE
	CB2-0604-000	C	1	SPRING, PLATE
	CG1-3795-000	C	1	AUTO FOCUS ASS'Y
	CG1-3797-000	C	1	EYEPIECE LENS ASS'Y
	CG1-3798-000	C	1	SPC SENSOR ASS'Y
*	CG2-0761-000	C	1	SHUTTER ASS'Y
*	CG2-0770-000	C	1	PCB ASS'Y, CAMERA MAIN
*	CG2-0776-000	C	1	VF LCD ASS'Y
	CH1-6869-000	C	1	FPC, SHUTTER
	XA4-9170-357	F	1	SCREW M17X3.5
	XA4-9170-359	F	1	SCREW M17X3.5
	XA4-9170-409	F	3	SCREW M17x4
	XA4-9170-457	F	2	SCREW M17X4.5
	XA4-9170-509	F	2	SCREW M17X5

CANON DIGITAL CAMERA EOS D60

CY3-1394



CB2-0682-000 (XXX) detail

A (XXX)

A	SIZE
0.03 mm	(003)
0.05 mm	(005)
0.08 mm	(008)
0.10 mm	(010)
0.12 mm	(012)
0.15 mm	(015)
0.18 mm	(018)
0.20 mm	(020)

CB1-2659-000 (XXX) detail

B (XXX)

B	SIZE
0.05 mm	(005)
0.08 mm	(008)
0.10 mm	(010)
0.12 mm	(012)
0.15 mm	(015)
0.18 mm	(018)

CB2-0714-000 (XXX) detail

C (XXX)

C	SIZE
0.05 mm	(005)
0.10 mm	(010)
0.15 mm	(015)
0.20 mm	(020)
0.25 mm	(025)
0.30 mm	(030)
0.35 mm	(035)
0.40 mm	(040)
0.45 mm	(045)
0.50 mm	(050)

REF.NO. C12-6011

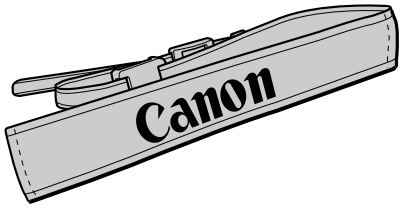
NEW	PARTS No	CLASS	QTY	DESCRIPTION
	CA1-7777-000	C	1	MOUNT, BODY
	CB1-2659-000 (XXX)	C	1	SPACER, MOUNT
	CB1-4085-000	C	4	SCREW M2X6.5
	CB2-0606-000	C	1	COVER, MIRROR BOX
	CB2-0622-000	C	1	SPRING, SCREEN
	CB2-0682-000 (XXX)	C	3	WASHER, FB ADJ.
	CB2-0714-000 (XXX)	C	1	WASHER, SCREEN ADJ.
	CB2-0715-000	C	1	CUSHION
	CF1-1948-000	C	1	LEVER, LENS LOCK
*	CG1-3791-000	C	1	CONTACT ASS'Y, LENS MOUNT
	CS2-5020-000	C	1	SPRING, COIL
	CS2-7205-000	C	1	SPRING, MOUNT
	CY1-1280-000	C	1	MOUNT, BODY (0.1mm under)
*	CY3-1394-000	C	1	MIRROR BOX ASS'Y
	XA4-9170-409	F	4	SCREW M17x4
	XD1-1102-120	F	1	WASHER (0.05mm)
	XD1-1102-121	F	1	WASHER (0.1mm)
	XD1-1102-122	F	1	WASHER (0.2mm)
*	YN2-3018-000	C	1	SCREEN, FOCUSING

REF.NO. C12-6011

NEW	PARTS No	CLASS	QTY	DESCRIPTION
*	CH2-7211-000	C	1	LEAD
*	CH2-7212-000	C	1	LEAD
*	CH2-7213-000	C	1	LEAD
*	CH2-7235-000	C	1	LEAD
	Y11-3706-000	C	1	LEAD (ORANGE)
	Y11-3711-000	C	1	LEAD (BLUE)
	Y11-3901-000	C	1	LEAD (WHITE)
	Y11-3902-000	C	1	LEAD (BLACK)
	Y11-3903-000	C	1	LEAD (RED)
	Y11-3906-000	C	1	LEAD (ORANGE)
	Y11-3907-000	C	1	LEAD (YELLOW)
	Y11-3909-000	C	1	LEAD (GREEN)
	Y11-3911-000	C	1	LEAD (BLUE)
	Y11-5002-000	C	1	LEAD (BLACK)
	Y11-5003-000	C	1	LEAD (RED)
	Y11-5004-000	C	1	LEAD (PINK)

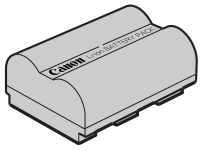
Accessories Section

Neck Strap EW-100DB (with eyepiece cover)



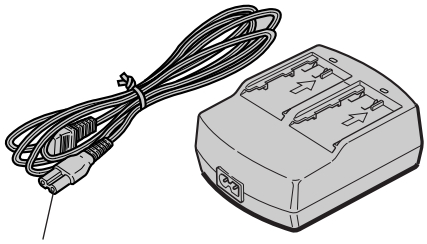
N.S (Product Available)

Battery Pack BP-511



N.S (Product Available)

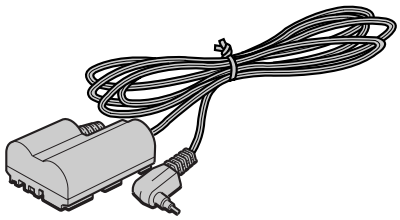
Compact Power Adapter CA-PS400



WT3-5062
WT3-5063
WT3-5064
WT3-5115
WT3-5066

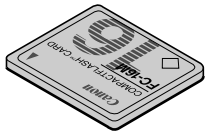
N.S (Product Available)

DC Coupler DR-400



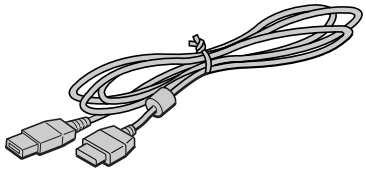
N.S (Product Available)

CompactFlash Card FC-16M



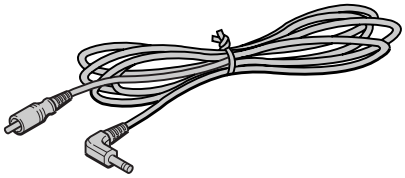
N.S (Product Available)

Interface Cable IFC-200 PCU



FH6-0775

Video Cable VC-100



FH6-3922

REF.NO. C12-6011

NEW	PARTS No	CLASS	QTY	DESCRIPTION
	FH6-0775-000	C		INTERFACE CABLE IFC-200 PCU
	FH6-3922-010	C		VIDEO CABLE VC-100
	WT3-5062-000	C		CABLE, AC (JPN)
	WT3-5063-000	C		CABLE, AC (USA)
	WT3-5064-000	C		CABLE, AC (EUR)
	WT3-5066-000	C		CABLE, AC (AUSTRALIA)
	WT3-5115-000	C		CABLE, AC (UK)

P A R T S I N D E X

REF.NO. C12-6011

NEW	PARTS No	PAGE	NEW	PARTS No	PAGE
	CA1-7777-000	15		CB2-0629-000	4
	CA1-9007-000	13		CB2-0630-000	4
	CA1-9125-000	12		CB2-0637-000	4
	CB1-0279-000	13		CB2-0639-000	4
	CB1-1902-000	14		CB2-0640-000	6
	CB1-2659-000 (XXX)	15		CB2-0652-000	13
	CB1-2678-000	4		CB2-0654-000	5
	CB1-4085-000	15		CB2-0657-000	13
*	CB1-6315-000	14		CB2-0658-000	13
	CB1-6578-000	2		CB2-0659-000	13
	CB1-6588-000	6		CB2-0660-000	13
	CB1-6589-000	6		CB2-0661-000	5
	CB1-7756-000	12		CB2-0662-000	13
	CB2-0551-000	6		CB2-0666-000	1
	CB2-0552-000	6		CB2-0670-000	10
	CB2-0554-000	6		CB2-0680-000	1
	CB2-0555-000	7		CB2-0681-000	5
	CB2-0556-000	13		CB2-0682-000 (XXX)	15
	CB2-0557-000	12		CB2-0684-000	5
	CB2-0558-000	11		CB2-0686-000	1
	CB2-0560-000	6		CB2-0687-000	5
	CB2-0564-000	7		CB2-0714-000 (XXX)	15
	CB2-0565-000	7		CB2-0715-000	15
	CB2-0566-000	6		CB2-0719-000	1
	CB2-0568-000	1		CB2-0720-000	1
	CB2-0570-000	7		CB2-0721-000	3,5
	CB2-0571-000	13		CB2-0722-000	5
	CB2-0573-000	7		CB2-0723-000	5
	CB2-0576-000	7		CB2-0724-000	3
	CB2-0577-000	7		CB2-0726-000	2
	CB2-0578-000	7		CB2-0727-000	2
	CB2-0587-000	6		CB2-1371-000	9
	CB2-0589-000	1		CB2-1372-000	9
	CB2-0599-000	14		CB2-1373-000	9
	CB2-0601-000	6	*	CB3-0329-000	1
	CB2-0604-000	14	*	CB3-0331-000	10
	CB2-0606-000	15		CF1-1948-000	15
	CB2-0614-000	5		CF1-3851-000	7
	CB2-0615-000	5		CF1-3855-000	1
	CB2-0622-000	15		CF1-3856-000	11

P A R T S I N D E X

REF.NO. C12-6011

NEW	PARTS No	PAGE	NEW	PARTS No	PAGE
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	CG1-1964-000	11		CS2-5020-000	15
	CG1-1965-000	13		CS2-5656-000	6
	CG1-1966-000	13		CS2-5855-000	2
	CG1-1967-000	9		CS2-7205-000	15
	CG1-1968-000	9		CS3-5064-000	13
	CG1-1969-000	4		CS3-5071-000	4
	CG1-1970-000	12		CS3-6164-000	5
	CG1-3773-000	13		CY1-1280-000	15
	CG1-3779-000	13	*	CY3-1390-000	1
	CG1-3781-000	13	*	CY3-1392-000	10
	CG1-3782-000	9	*	CY3-1393-000	10
	CG1-3786-000	1	*	CY3-1394-000	15
*	CG1-3791-000	15		FC2-9551-000	7,9
	CG1-3795-000	14		FH6-0775-000	17
	CG1-3797-000	14		FH6-3922-010	17
	CG1-3798-000	14		WT3-5062-000	17
*	CG2-0761-000	14		WT3-5063-000	17
*	CG2-0770-000	14		WT3-5064-000	17
*	CG2-0771-000	10		WT3-5066-000	17
*	CG2-0772-000	8		WT3-5115-000	17
*	CG2-0773-000	9		XA1-3170-207	1
*	CG2-0774-000	8		XA1-3200-257	7
*	CG2-0776-000	14		XA1-7140-307	4
*	CG2-0778-000	2		XA1-7170-207	9,13
*	CG2-0782-000	8		XA1-7170-259	7,13
*	CG2-0783-000	4		XA1-7170-309	10
*	CG2-0786-000	6		XA1-7170-357	9
	CH1-6863-000	9		XA1-7200-307	5,9
	CH1-6864-000	9		XA1-7200-359	2,5
	CH1-6865-000	9		XA4-5140-357	4
	CH1-6869-000	14		XA4-5170-407	9
	CH1-6870-000	12		XA4-6170-409	6
	CH2-5298-000	6		XA4-8200-459	7,12
	CH2-5299-000	6		XA4-9170-357	6,8,11,12,13,14
*	CH2-7211-000	16		XA4-9170-359	14
*	CH2-7212-000	16		XA4-9170-409	4,5,8,9,11,14,15
*	CH2-7213-000	16		XA4-9170-457	8,10,13,14
*	CH2-7235-000	16		XA4-9170-509	5,6,14
	CH9-0321-000	12		XA4-9200-457	6,7,11,13

REF.NO. C12-6011

NEW	PARTS No	PAGE	NEW	PARTS No	PAGE
	XA4-9200-559	7			
	XD1-1102-120	15			
	XD1-1102-121	15			
	XD1-1102-122	15			
	XD2-1100-132	4,6			
	XD2-1100-172	2			
	XG8-1100-591	4			
	Y11-3706-000	16			
	Y11-3711-000	16			
	Y11-3901-000	16			
	Y11-3902-000	16			
	Y11-3903-000	16			
	Y11-3906-000	16			
	Y11-3907-000	16			
	Y11-3909-000	16			
	Y11-3911-000	16			
	Y11-5002-000	16			
	Y11-5003-000	16			
	Y11-5004-000	16			
*	YN2-3018-000	15			

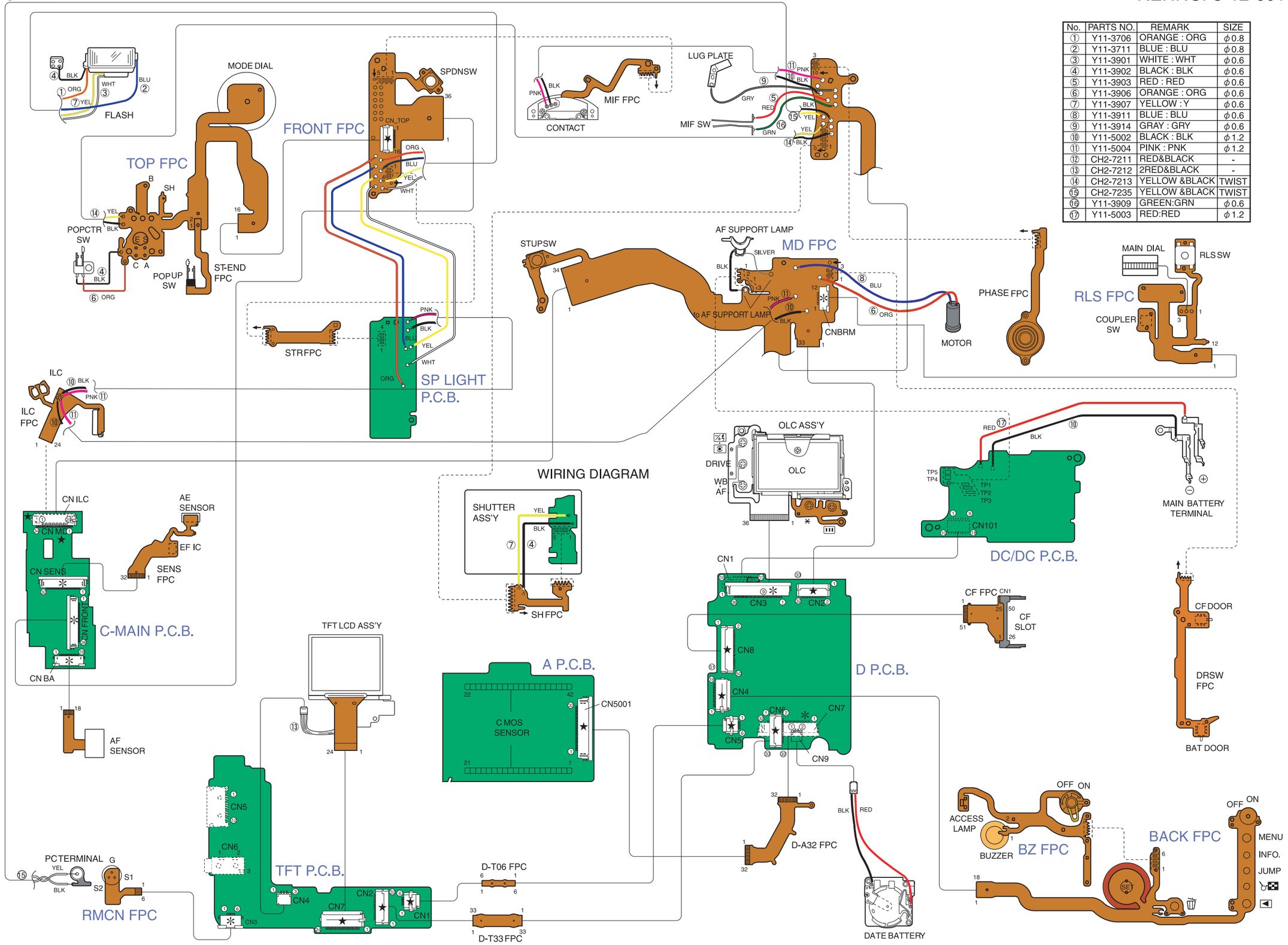
Part 6

Circuit Diagrams

1. WIRING DIAGRAM

REF.NO. C 12-6011

No.	PARTS NO.	REMARK	SIZE
①	Y11-3706	ORANGE : ORG	φ0.8
②	Y11-3711	BLUE : BLU	φ0.8
③	Y11-3901	WHITE : WHT	φ0.6
④	Y11-3902	BLACK : BLK	φ0.6
⑤	Y11-3903	RED : RED	φ0.6
⑥	Y11-3906	ORANGE : ORG	φ0.6
⑦	Y11-3907	YELLOW : Y	φ0.6
⑧	Y11-3911	BLUE : BLU	φ0.6
⑨	Y11-3914	GRAY : GRY	φ0.6
⑩	Y11-5002	BLACK : BLK	φ1.2
⑪	Y11-5004	PINK : PNK	φ1.2
⑫	CH2-7211	RED&BLACK	-
⑬	CH2-7212	2RED&BLACK	-
⑭	CH2-7213	YELLOW &BLACK	TWIST
⑮	CH2-7235	YELLOW &BLACK	TWIST
⑯	Y11-3909	GREEN:GRN	φ0.6
⑰	Y11-5003	RED:RED	φ1.2



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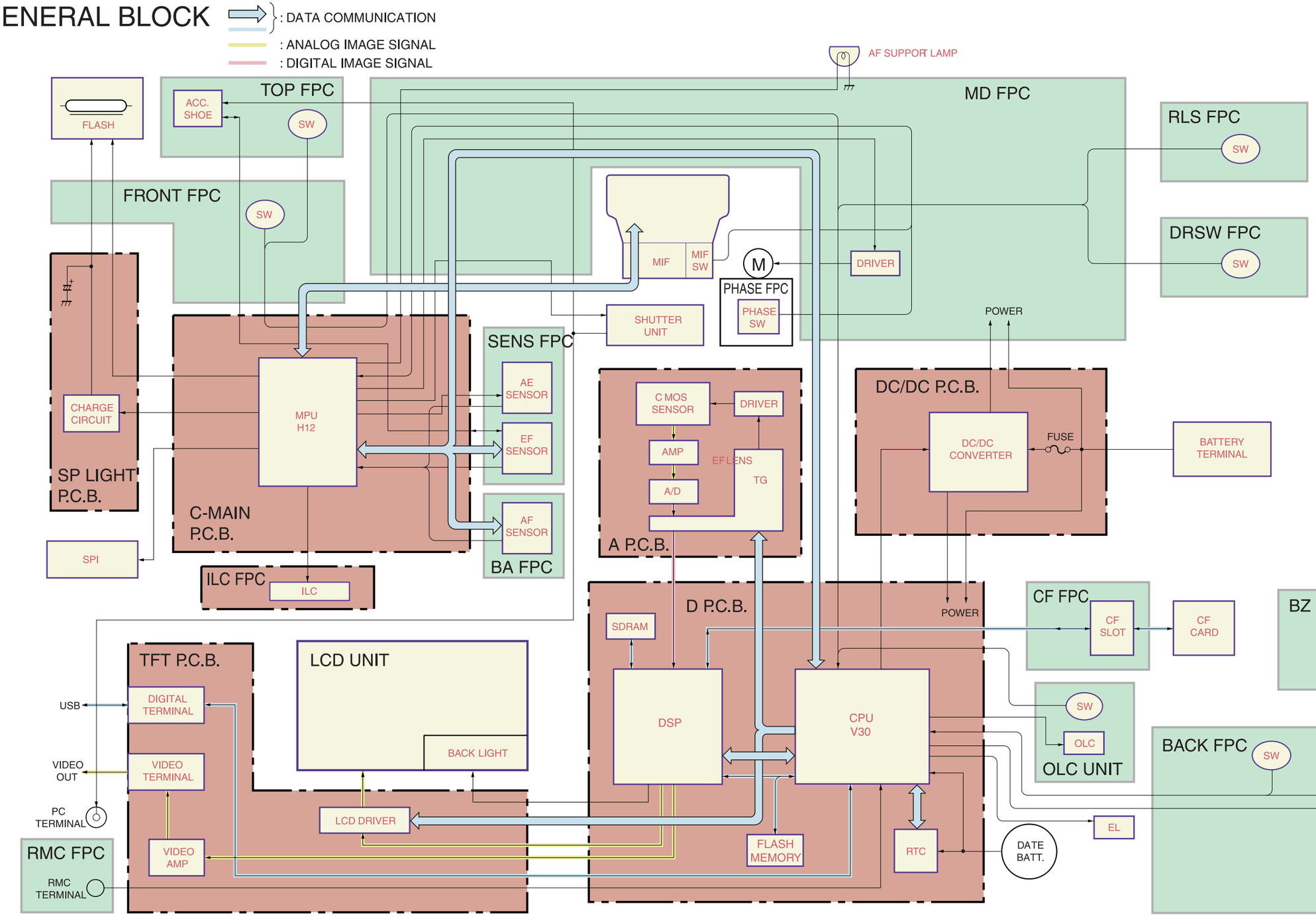
GENERAL BLOCK



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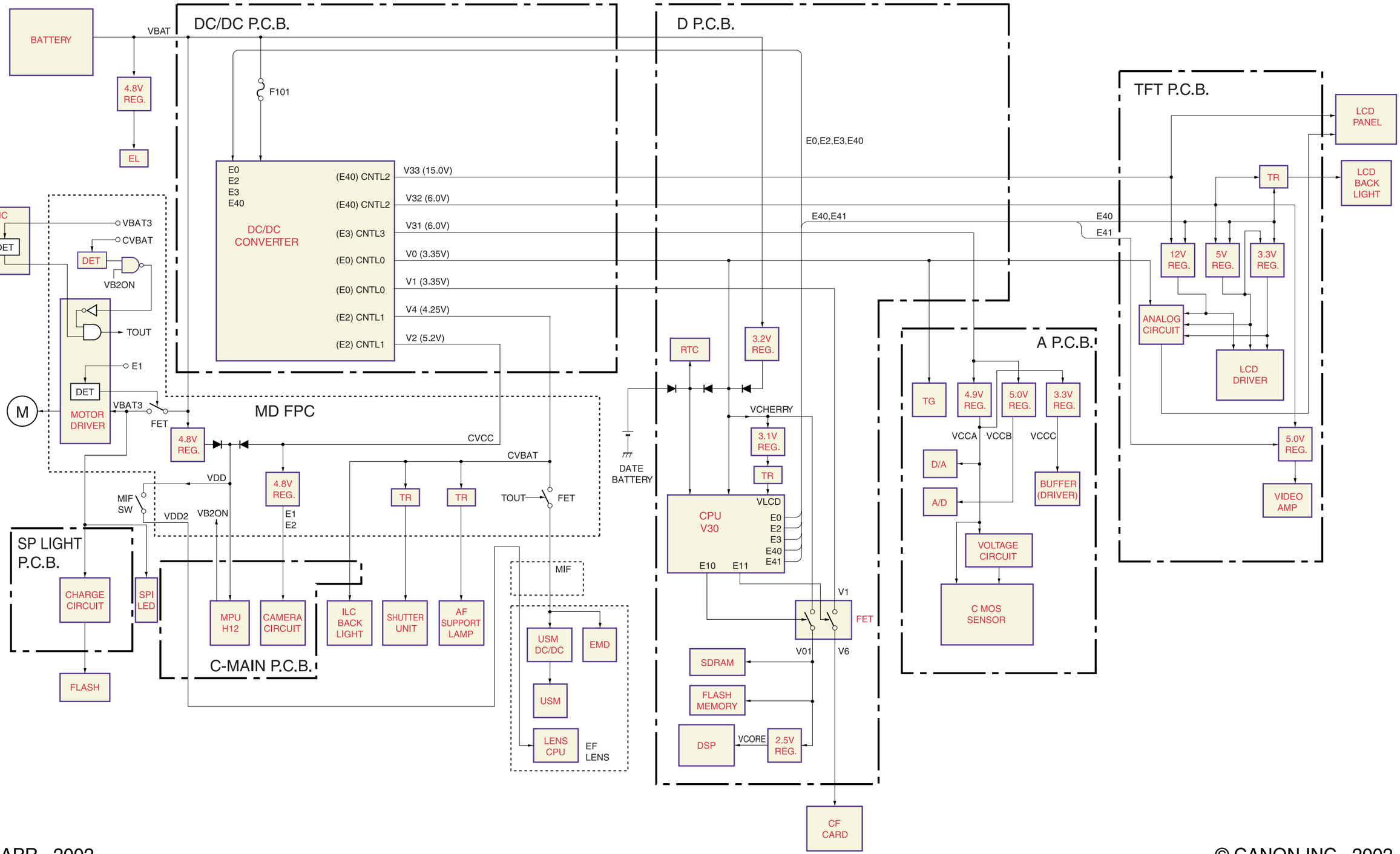
POWER SUPPLY BLOCK



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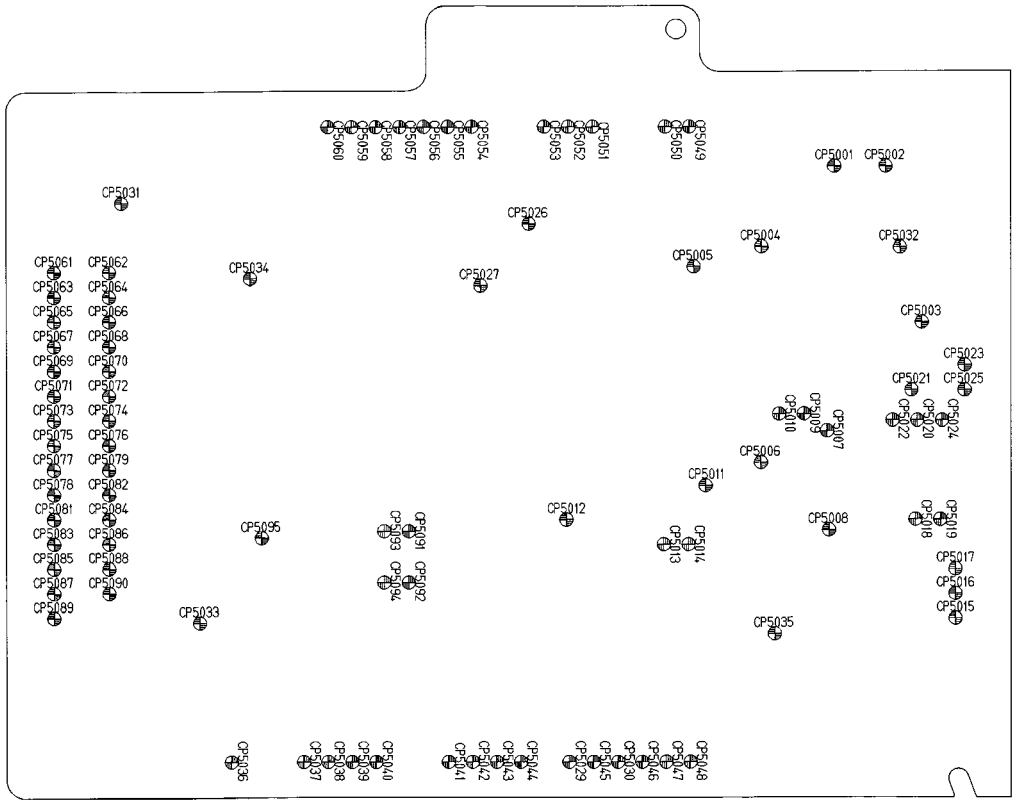
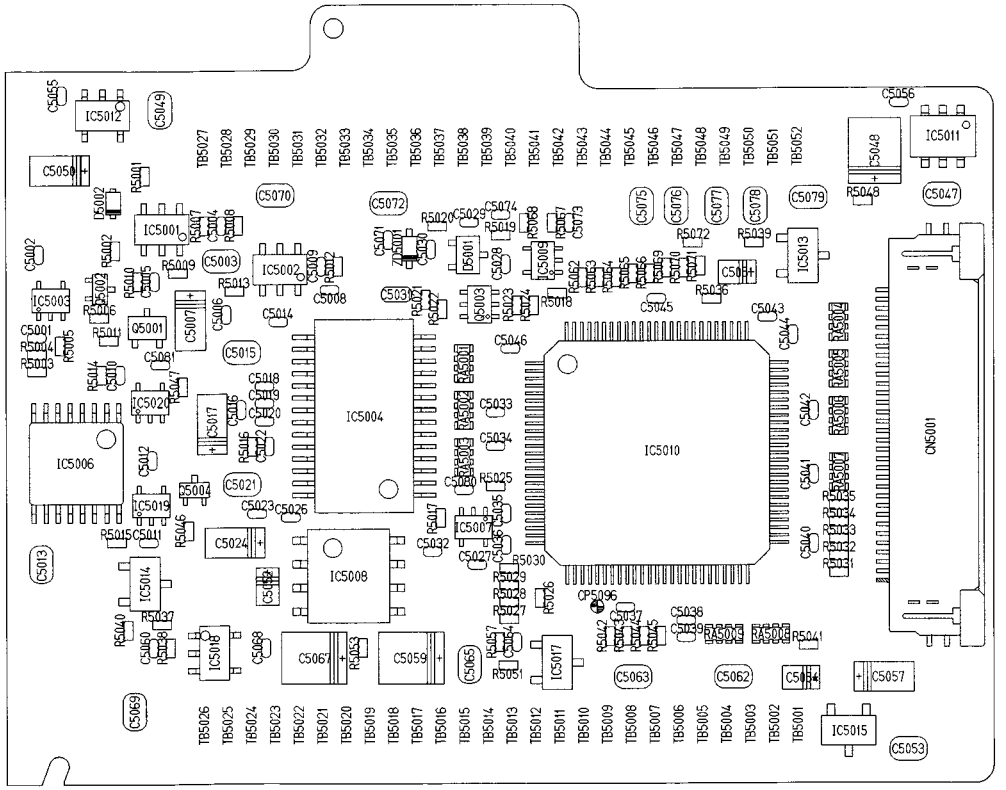
A P.C.B. _SIDE A



A P.C.B. _SIDE B



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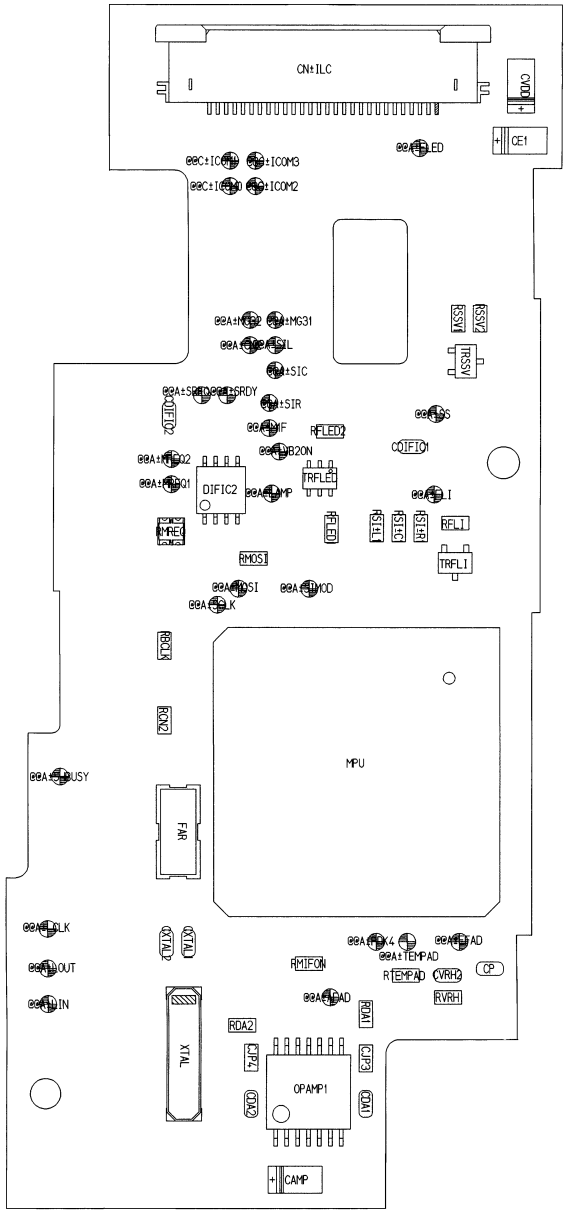
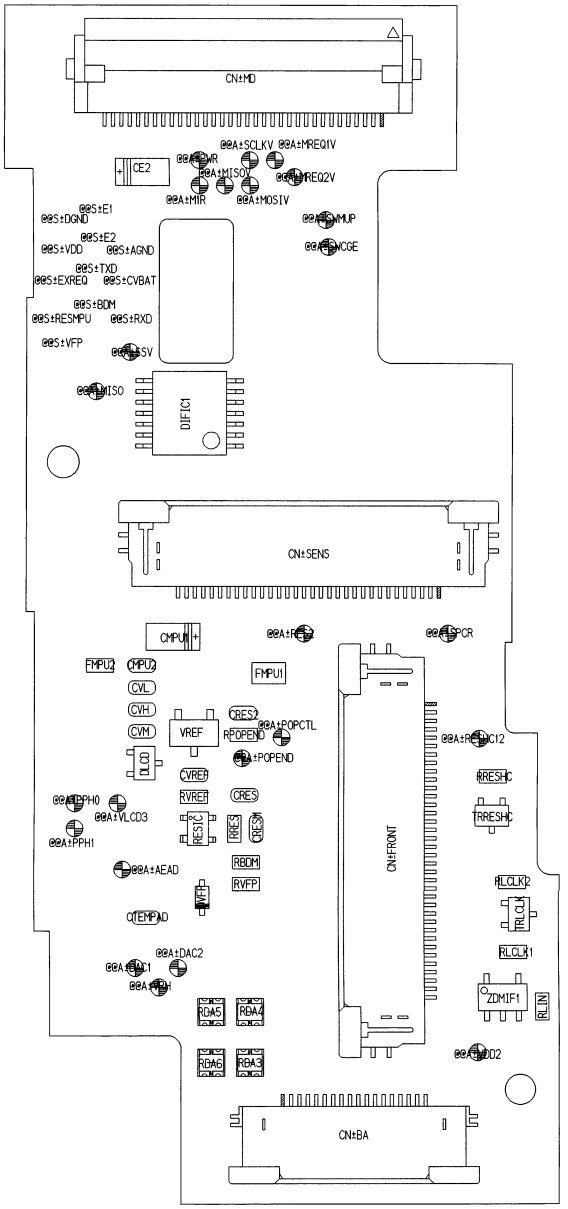
C-MAIN P.C.B. _SIDE A



C-MAIN P.C.B. _SIDE B



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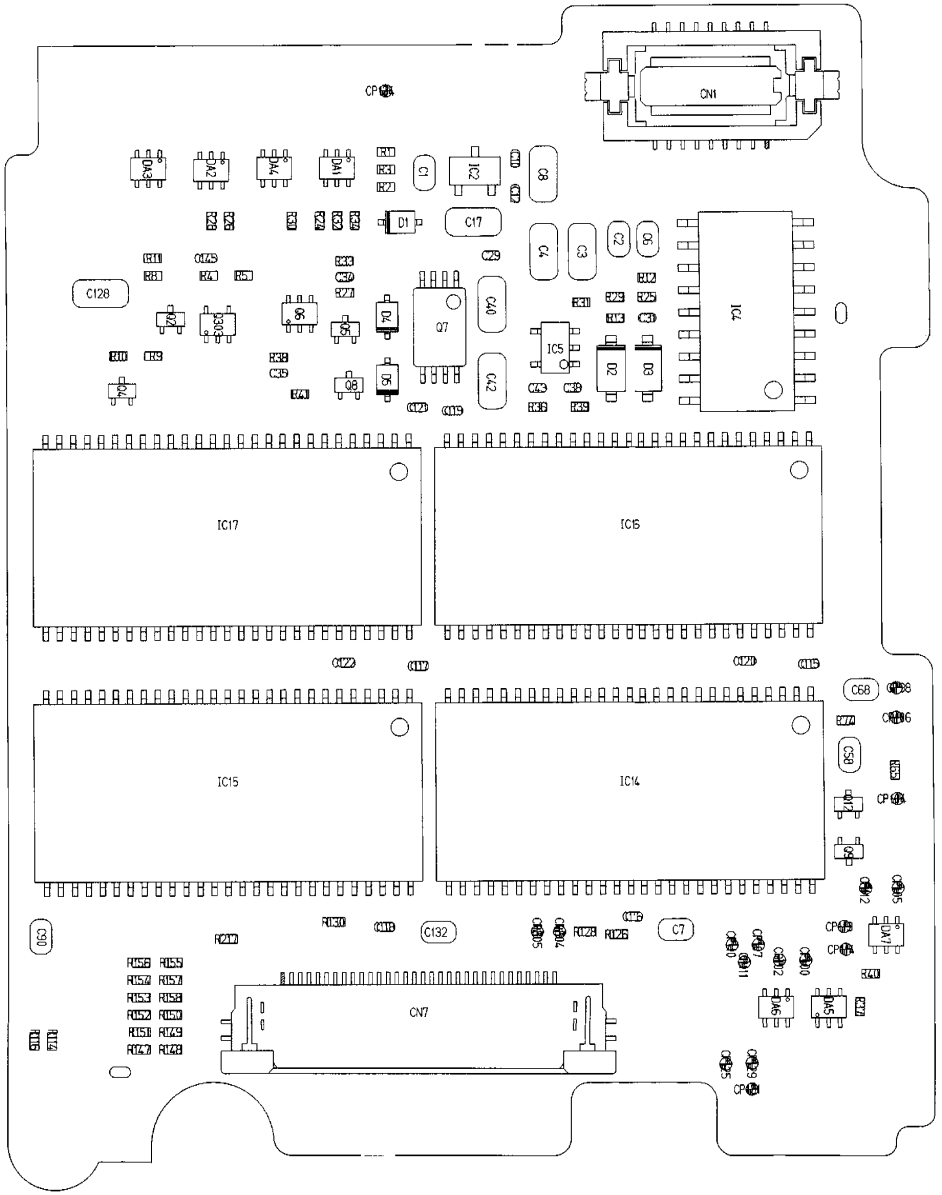
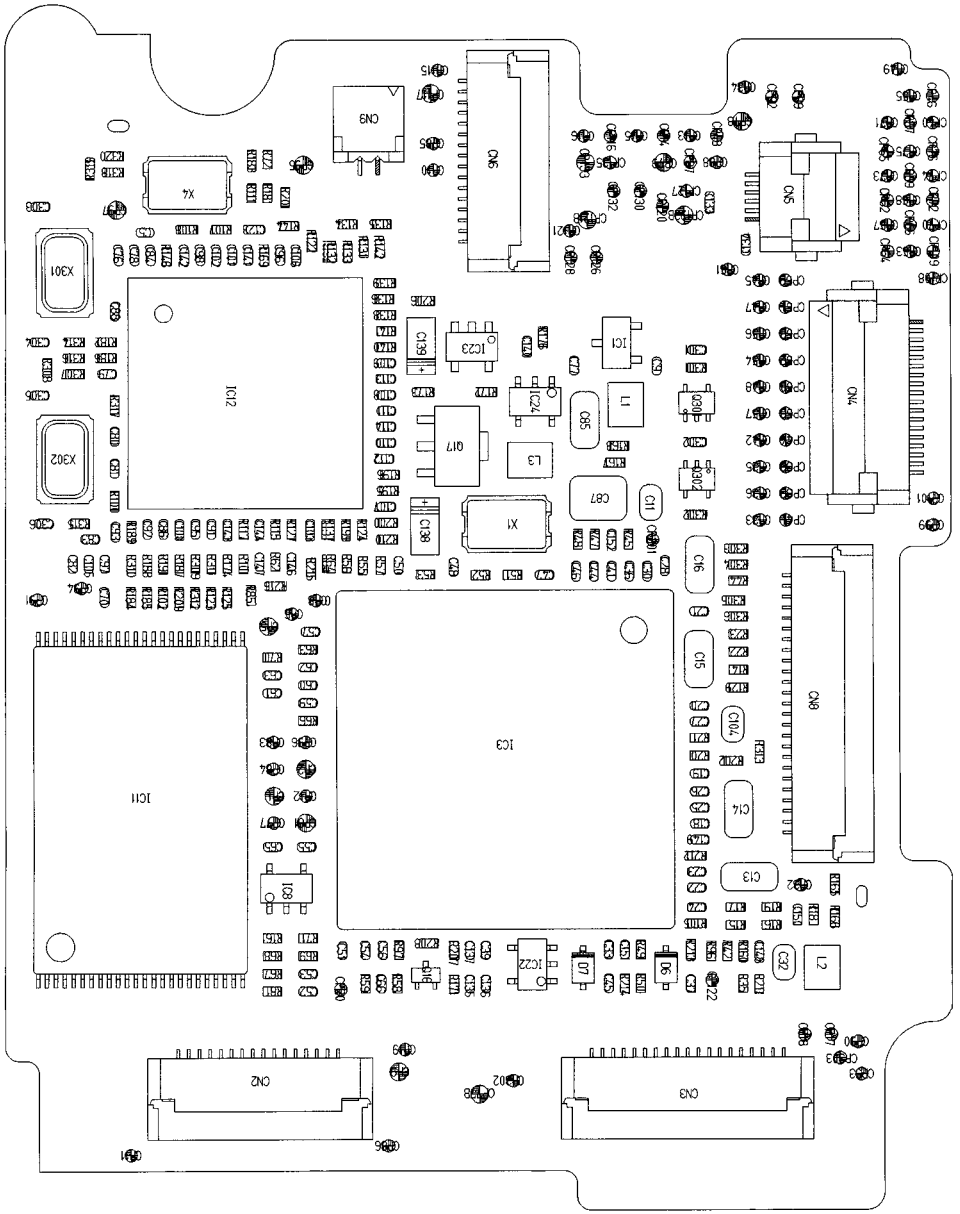
D P.C.B. _SIDE A



D P.C.B. _SIDE B



01 APR., 2002

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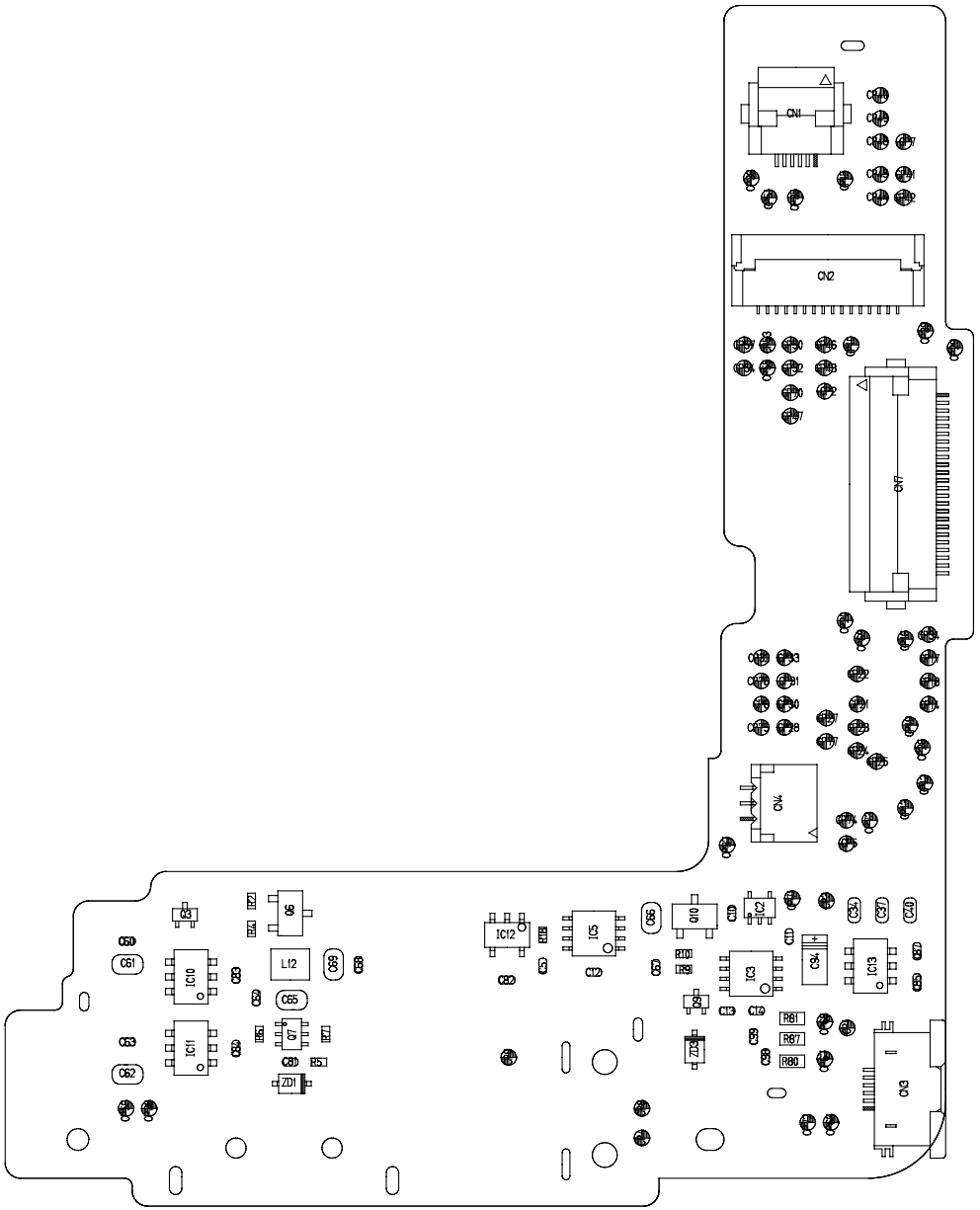
TFT P.C.B. _SIDE A



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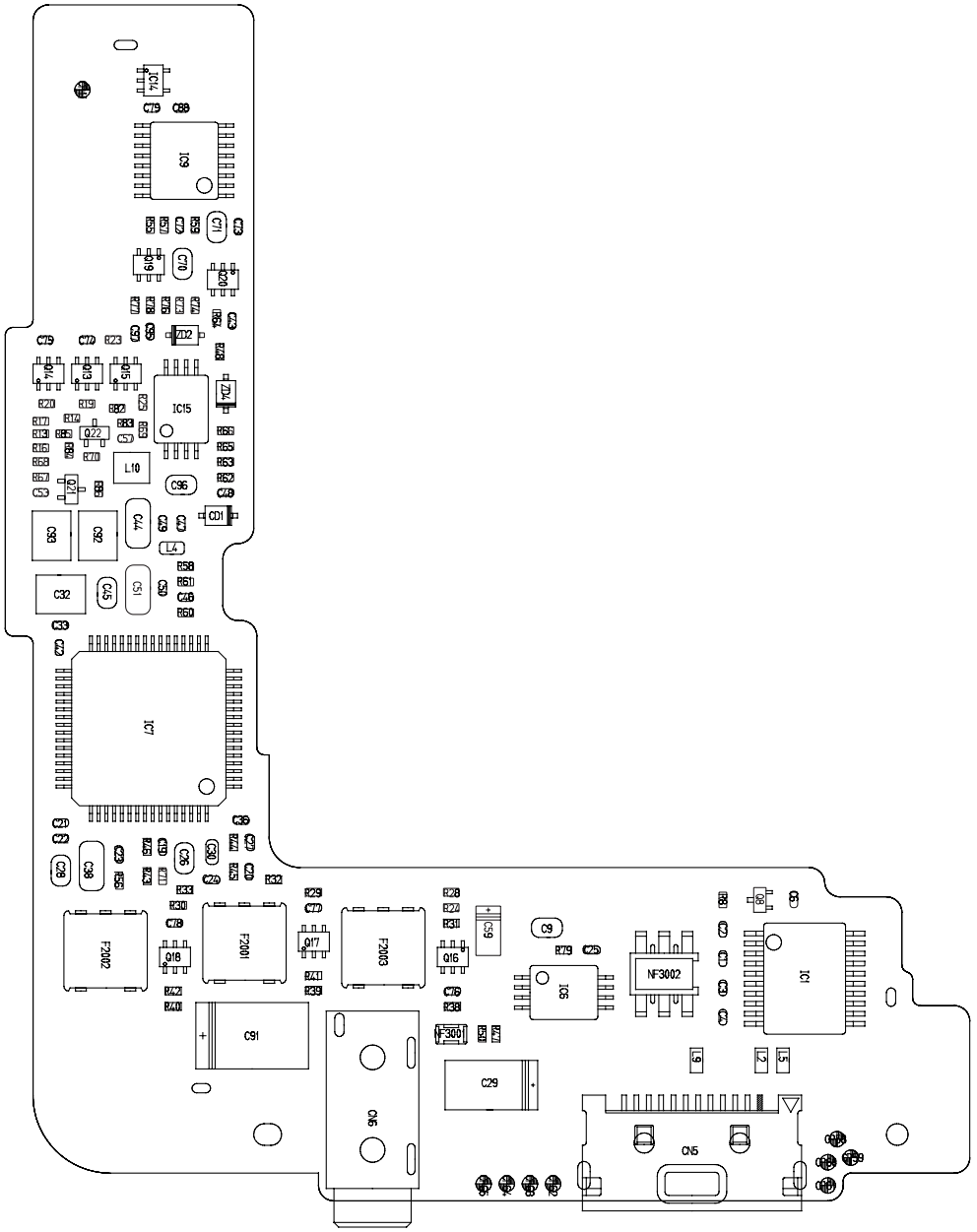

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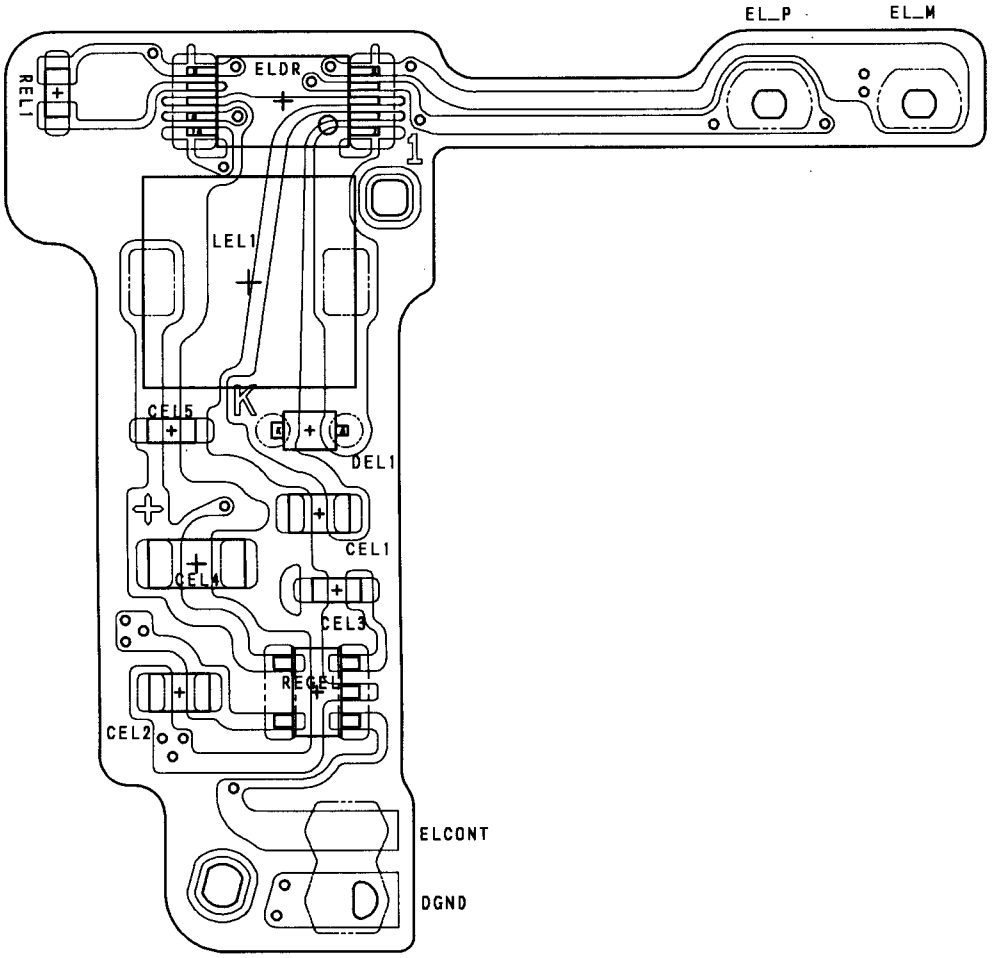
EL F.P.C.



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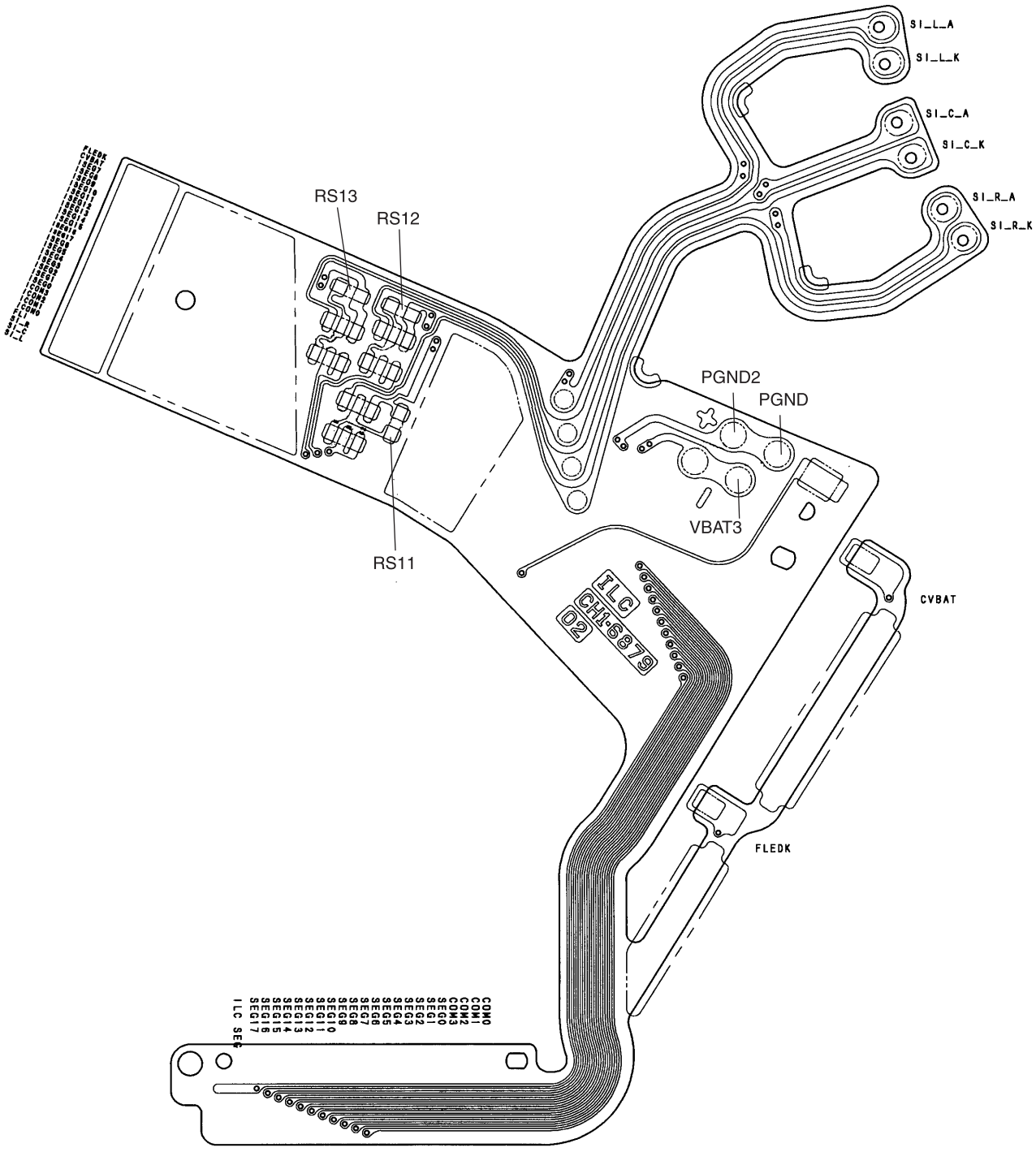
ILC F.P.C.



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Part 7

Software Information

1. GENERAL INFORMATION

1.1 Product Overview

The software for the EOS D60 consists of the applications listed below (Table 1) and is provided on the enclosed Windows/Macintosh hybrid CD-ROM.

Adobe Photoshop 5.0 LE CD-ROM (in 9 languages) is also enclosed as image retouching software that is compatible with the TWAIN Driver/Plug-In Module.

These software applications are compatible with the EOS D60, EOS-1D and EOS D30 cameras.

However, note that only the EOS D60 supports Windows XP. Windows XP support on the EOS-1D and EOS D30 is under consideration.
Support for Mac OS X will be provided as an after-sales upgrade.

Operating System	Windows version	Mac OS version
Software type	TWAIN Driver	Plug-In Module
	WIA Driver	USB Mounter
	RAW Image Converter	RAW Image Converter
	RemoteCapture	RemoteCapture
	ZoomBrowser EX	ImageBrowser
	PhotoRecord	
	PhotoStitch	PhotoStitch

Table 7-1 EOS D60 Software Configuration

1.2 Compatible Operating Systems and Computer Environments

Table 7-2 shows the compatible operating systems and computer environments. The EOS D60 software will support 6 languages (Japanese, English, French, German, Italian and Spanish) and will be provided in 3 versions on separate CD-ROMs (Japanese-English, English-French-Spanish, and English-German-Italian).

<table>
<tr><td>Platform</td><td colspan="2">Windows</td><td colspan="2">Macintosh</td></tr>
<tr><td>Computer</td><td colspan="2">IBM PC/AT-compatible machine with OHCI-compliant USB port</td><td colspan="2">Macintosh computer with USB port as standard</td></tr>
<tr><td>CPU</td><td colspan="2">Windows 98 SE/Me/2000: 150 MHz Pentium or better
Windows XP: 300 MHz Pentium or better</td><td colspan="2">Power PC</td></tr>
<tr><td>Operating system</td><td colspan="2">Windows 98 SE/Me/2000/XP
* Pre-installed systems only</td><td colspan="2">Mac OS 8.6 to 9.2
(9.0 or later recommended)
* USB Mounter requires Mac OS 9.0 or later</td></tr>
<tr><td>RAM</td><td colspan="2">Windows 98 SE/Me/2000: 64 MB or better
Windows XP: 128 MB or better</td><td colspan="2">Minimum 64 MB assigned as program memory (128 MB or better recommended)</td></tr>
<tr><td>Interface</td><td colspan="4">USB</td></tr>
<tr><td rowspan="8">Available hard disk space (MB/or better)</td><td>TWAIN Driver</td><td>30</td><td>Plug-In Module</td><td>20</td></tr>
<tr><td>WIA Driver</td><td>30</td><td>USB Mounter</td><td>5</td></tr>
<tr><td>RAW Image Converter</td><td>30</td><td>RAW Image Converter</td><td>20</td></tr>
<tr><td>RemoteCapture</td><td>20</td><td>RemoteCapture</td><td>15</td></tr>
<tr><td>ZoomBrowser EX</td><td rowspan="2">120</td><td rowspan="2">ImageBrowser</td><td rowspan="2">20</td></tr>
<tr><td>PhotoRecord</td></tr>
<tr><td>PhotoStitch</td><td>40</td><td>PhotoStitch</td><td>30</td></tr>
<tr><td>Display</td><td colspan="2">Min. 800 × 600 dots, 256 (8-bit) colors,
1024 × 768 dots, High Color (16-bit) recommended</td><td colspan="2">Min. 800 × 600 dots, 256 colors,
1024 × 768 dots, 32,000 colors recommended</td></tr>
<tr><td>Other</td><td colspan="4">CD-ROM drive required for installation.</td></tr>
</table>

Table 7-2 Compatible Operating Systems and Computer Environments

1.3 Connecting the EOS D60 to the Computer

The EOS D60 connects to the computer by means of a USB connection (ver. 1.1, transfer speed: 10 Mbps) using the dedicated interface cable provided. Images can also be downloaded to the computer by a card reader.

* At present, images captured with the EOS-1D and EOS D30 can only be downloaded to the computer by a card reader.

1.4 EOS D60 Software Overview

1) For Windows

- TWAIN Driver

  This driver complies with the TWAIN standard and runs on Windows 98 SE and Windows 2000. This driver allows the user to connect the EOS D60 to a computer using the interface cable provided and then display and download images saved on a CF card in the EOS D60 and process the RAW images. The main driver functions are listed in the table below.

  * This driver can only be launched from a software application that supports TWAIN functions (such as Photoshop LE).

Function		Compatible Cameras					
		EOS D60		EOS D30		EOS-1D	
		JPEG	RAW	JPEG	RAW	JPEG	RAW
Rotate image		○	○	○	○	○	○
Protect image		○	○	○	○	○	○
Erase image		○	○	○	○	○	○
Set checkmarks		○	○	○	○	○	○
Transfer image		○	○	○	○	○	○
Save image		○	○	○	○	○	○
Input comment		○	○	○	○	○	○
Show image information		○	○	○	○	○	○
Set IPTC information		—	—	—	—	○	○
Show AF frame		—	—	—	—	○	○
Play back sound		—	—	—	—	○	○
Extract JPEG		—	○	—	—	—	—
Digital exposure compensation		—	○	—	—	—	○
Set white balance		—	○	—	○	—	○
Set color temperature			—	—	—	—	○
Click white balance		—	○	—	○	—	○
Save white balance data		—	—	—	—	—	○
Contrast		—	○	—	○	—	—
Color density		—	○	—	○	—	—
Color balance		—	○	—	—	—	—
Adjust tone curve		—	—	—	—	—	○
Color matrix		—	—	—	—	—	○
Camera setting functions	Basic settings	○		○		○	
	Personal functions	—		—		○	
	Processing parameters	*—		○		○	
	Custom white balance	—		—		○	

* With the EOS D60, the processing parameters can be set on the camera itself.

Table 7-3 Main TWAIN Driver Functions

- WIA Driver
  This driver complies with the Microsoft WIA (Windows Image Acquisition) standard and runs on Windows Me and Windows XP. This driver allows the user to connect the EOS D60 to a computer using the interface cable provided and then access the camera in the same way as a removable disk. The “Scanners and Cameras Wizard” or the Microsoft Explorer can then be used to quickly and easily display the images on a CF card and download the images to the computer.
  RAW images can be processed by selecting the RAW images from the window and launching RAW Image Converter.
- RAW Image Converter
  This is a standalone utility that allows you to display images copied from any disk drive and process RAW images.
  However, because RAW Image Converter is a standalone utility, it provides no camera settings functions or image transfer functions. In all other respects, it offers the same functionality and window design as the TWAIN Driver.
- ZoomBrowser EX
  This is an image displaying and image management utility. Its main functions conform to the products supplied with the latest PowerShot series cameras.
  RAW images can be processed by selecting the RAW images from the window and launching RAW Image Converter.
  The Japanese version of ZoomBrowser EX includes a CIG (Canon Image Gateway) access function.
- PhotoRecord
  This is a layout and printing utility. Used in conjunction with ZoomBrowser EX, PhotoRecord provides functions such as automatic layout printing and index printing. Its main functions conform to the products supplied with the latest PowerShot series cameras.
- RemoteCapture
  This utility allows users to control the camera from a computer and to download images directly from the camera to a computer. As well as shooting single images, RemoteCapture can take pictures using a timer or interval timer. Its main functions conform to the products supplied with the EOS-1D.
- PhotoStitch
  This is a utility for merging images. It can be used to merge multiple images into a single image with great precision and is ideal for creating panorama shots. Its main functions conform to the products supplied with the latest PowerShot series cameras.

2) For Macintosh

- Photoshop Plug-In Module
  - This plug-in module provides the same functionality as the Windows TWAIN Driver for Camera.

  * This driver can only be launched from software application that supports plug-in functions (such as Photoshop LE).
- USB Mounter
  - This is a utility that mounts a EOS D60 camera connected using the enclosed interface cable as a read-only removable disk on the desktop. Images shot

using the EOS D60 can then be easily copied to the Macintosh's hard disk.

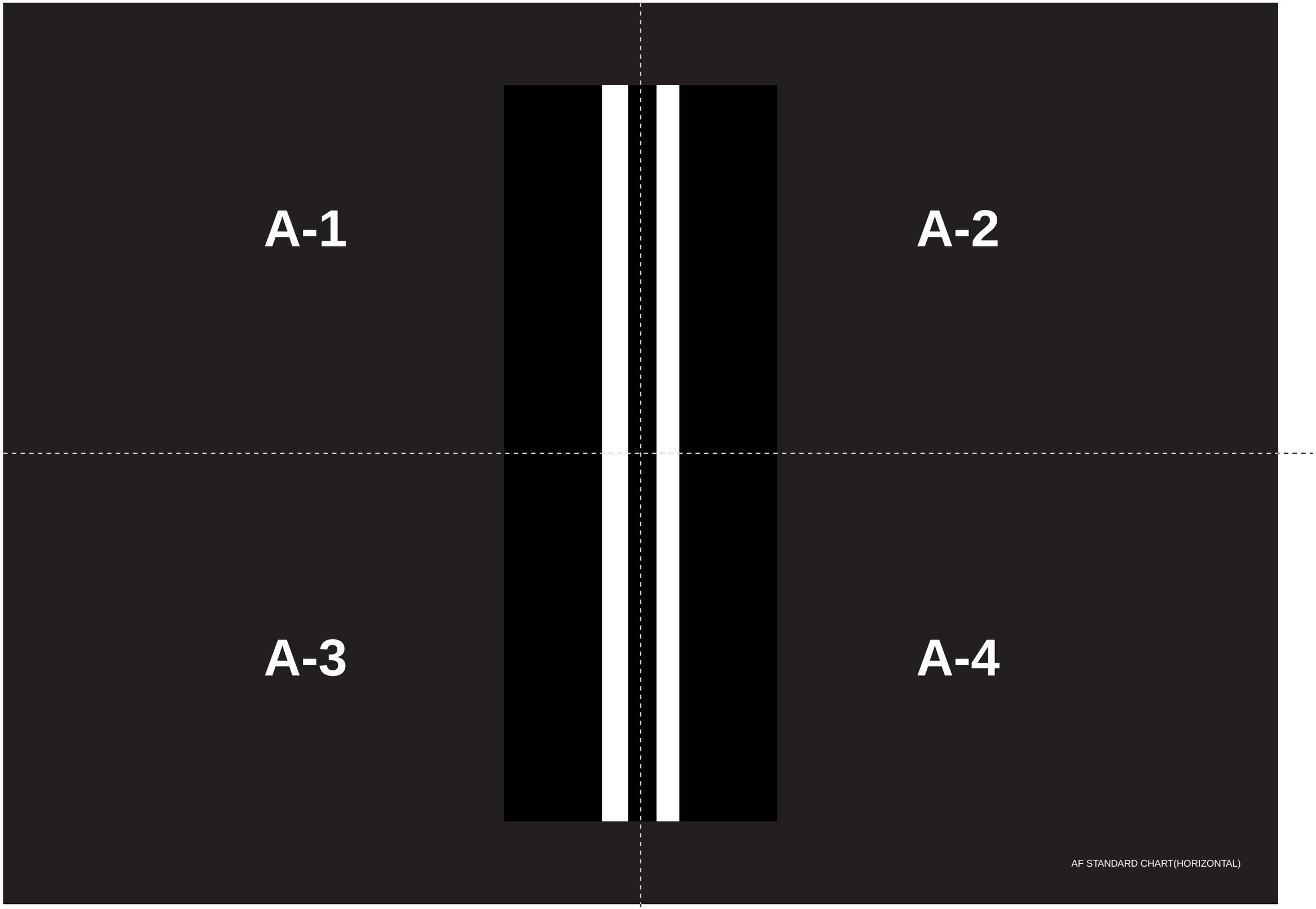
- RAW Image Converter
  - Macintosh version of RAW Image Converter for Windows.
- Image Browser
  - This is an image displaying and image management utility that provides the same functions as ZoomBrowser EX for Windows.
  - This software also provides the same functions as the PhotoRecord layout and printing utility for Windows.
- RemoteCapture
  - Macintosh version of RemoteCapture for Windows.
- PhotoStitch
  - Macintosh version of PhotoStitch for Windows.

Appendix

AGC Chart

(Print size : A3)

AF STANDARD CHART(HORIZONTAL)_Sample



A-1

Cutting line

Cutting line

Cutting line

AF STANDARD CHART(HORIZONTAL)

(Print size : A3)

A-2

Cutting line

Cutting line

Cutting line

AF STANDARD CHART(HORIZONTAL)

(Print size : A3)

AF STANDARD CHART(HORIZONTAL)

(Print size : A3)

Cutting line

Cutting line

Cutting line

A-3

AF STANDARD CHART(HORIZONTAL)

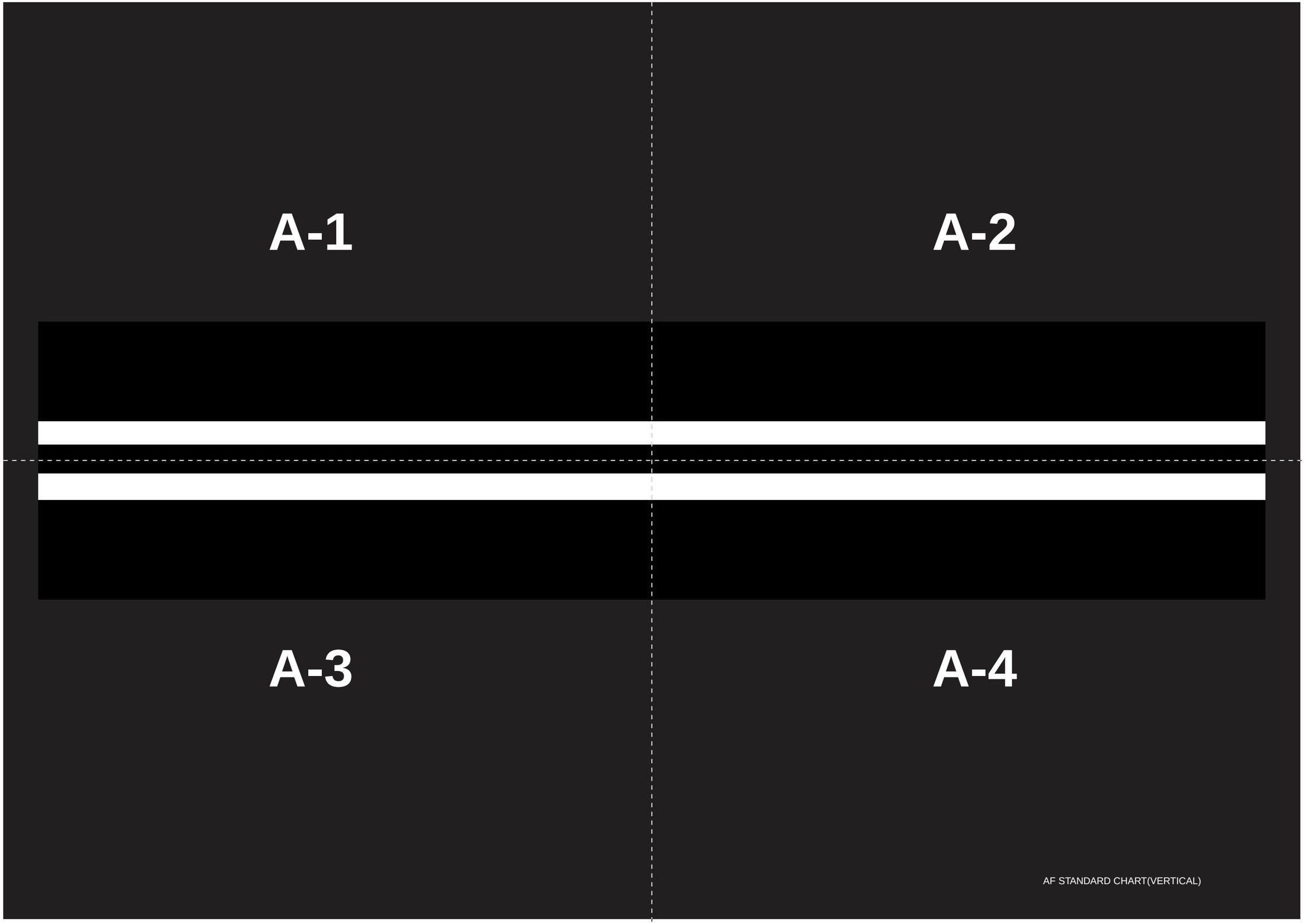
(Print size : A3)

Cutting line

Cutting line

Cutting line

AF STANDARD CHART(VERTICAL)_Sample



A-1

Cutting line

Cutting line

Cutting line

AF STANDARD CHART(VERTICAL)

(Print size : A3)

Cutting line

A-2

Cutting line

Cutting line

AF STANDARD CHART(VERTICAL)

(Printsize : A3)

Cutting line

AF STANDARD CHART(VERTICAL)

(Print size : A3)

Cutting line

A-3

Cutting line

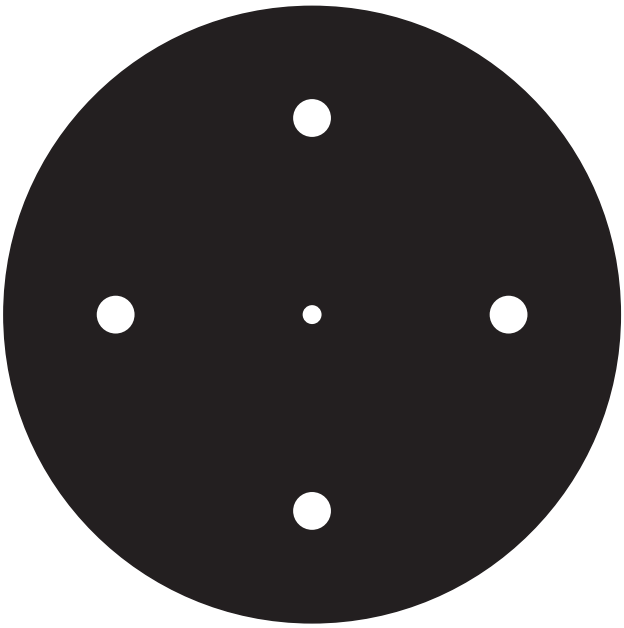
AF STANDARD CHART(VERTICAL)

(Print size : A3)

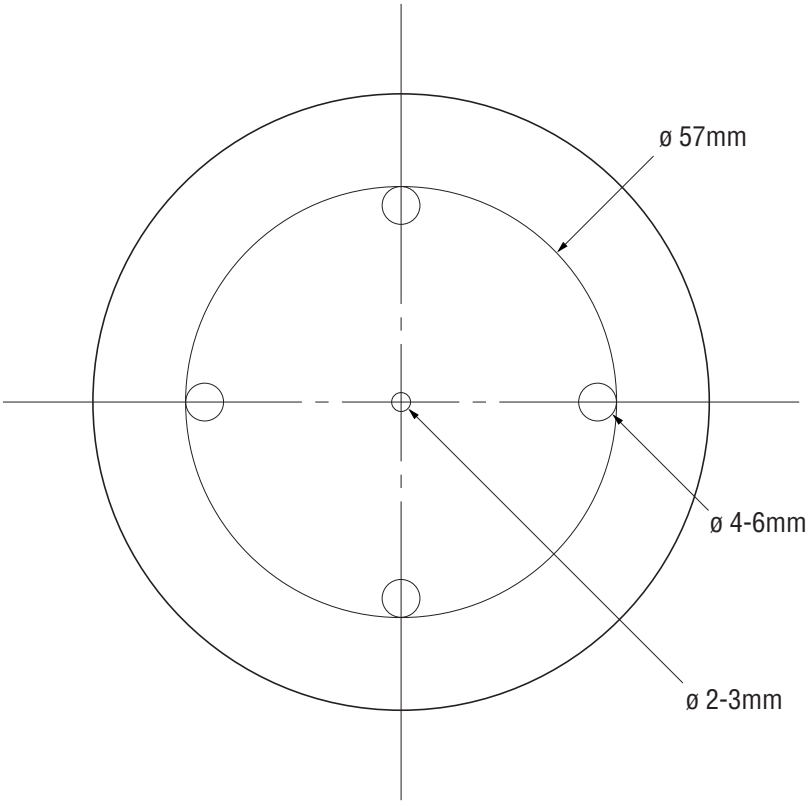
Cutting line

Cutting line

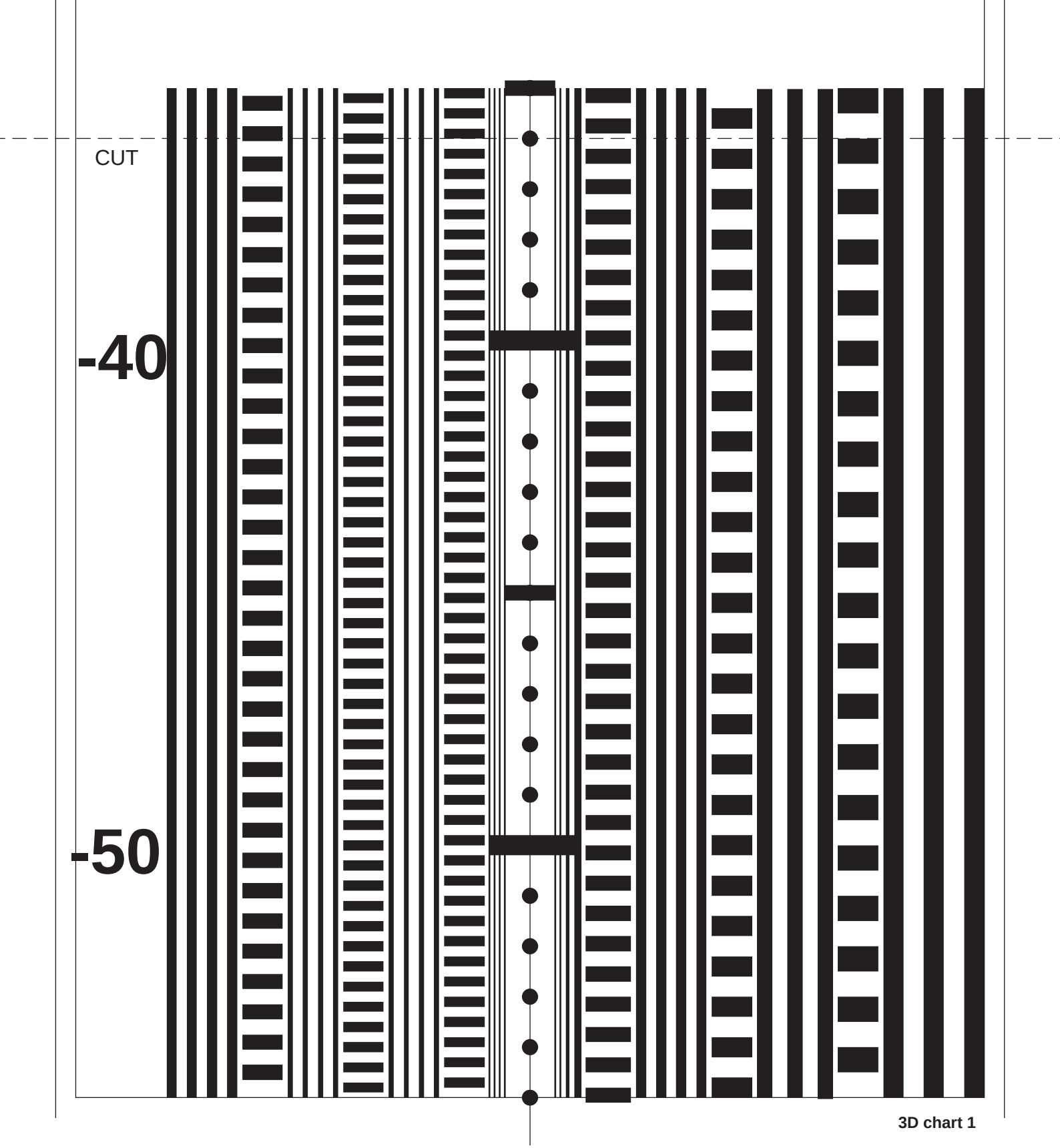
Cutting line



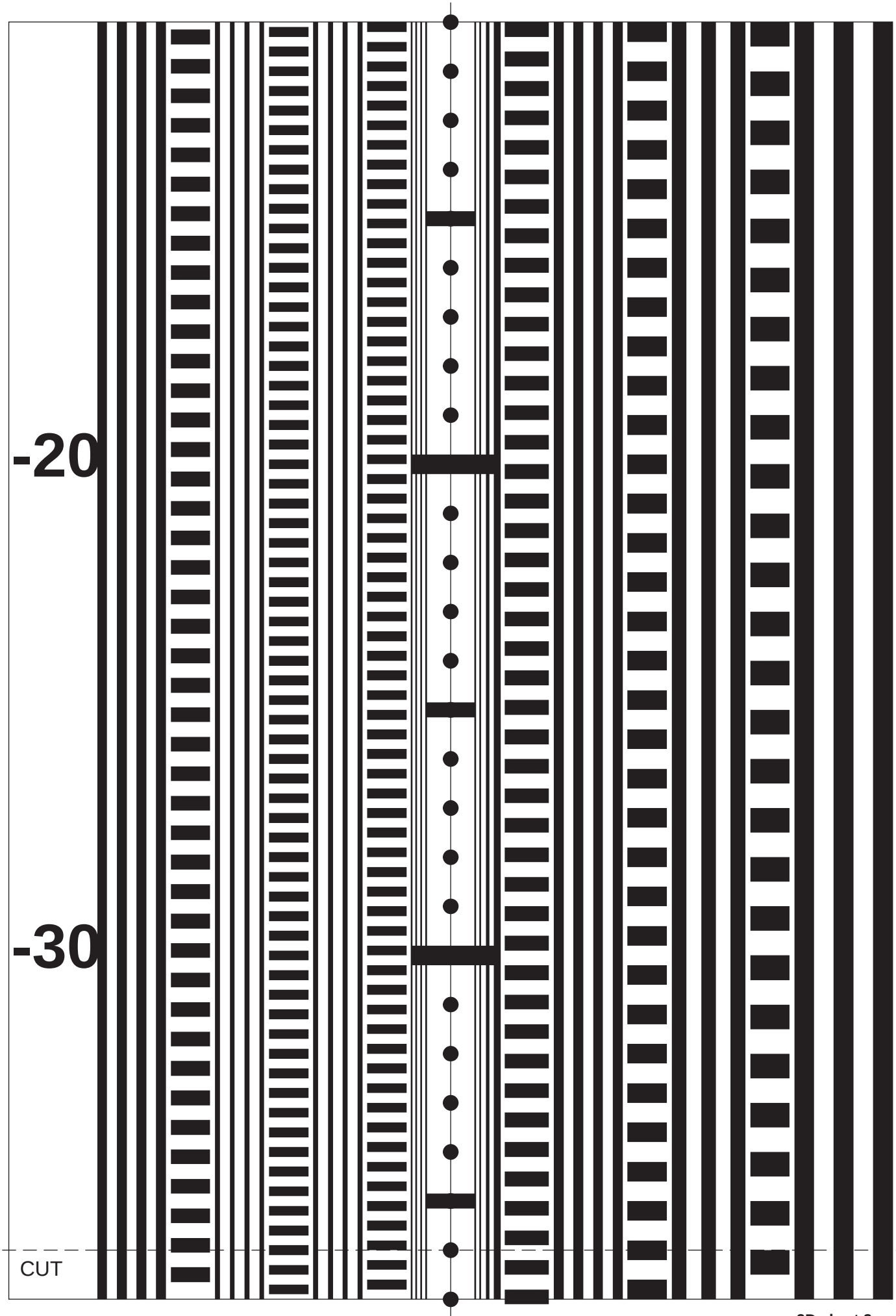
SPC position setting mask



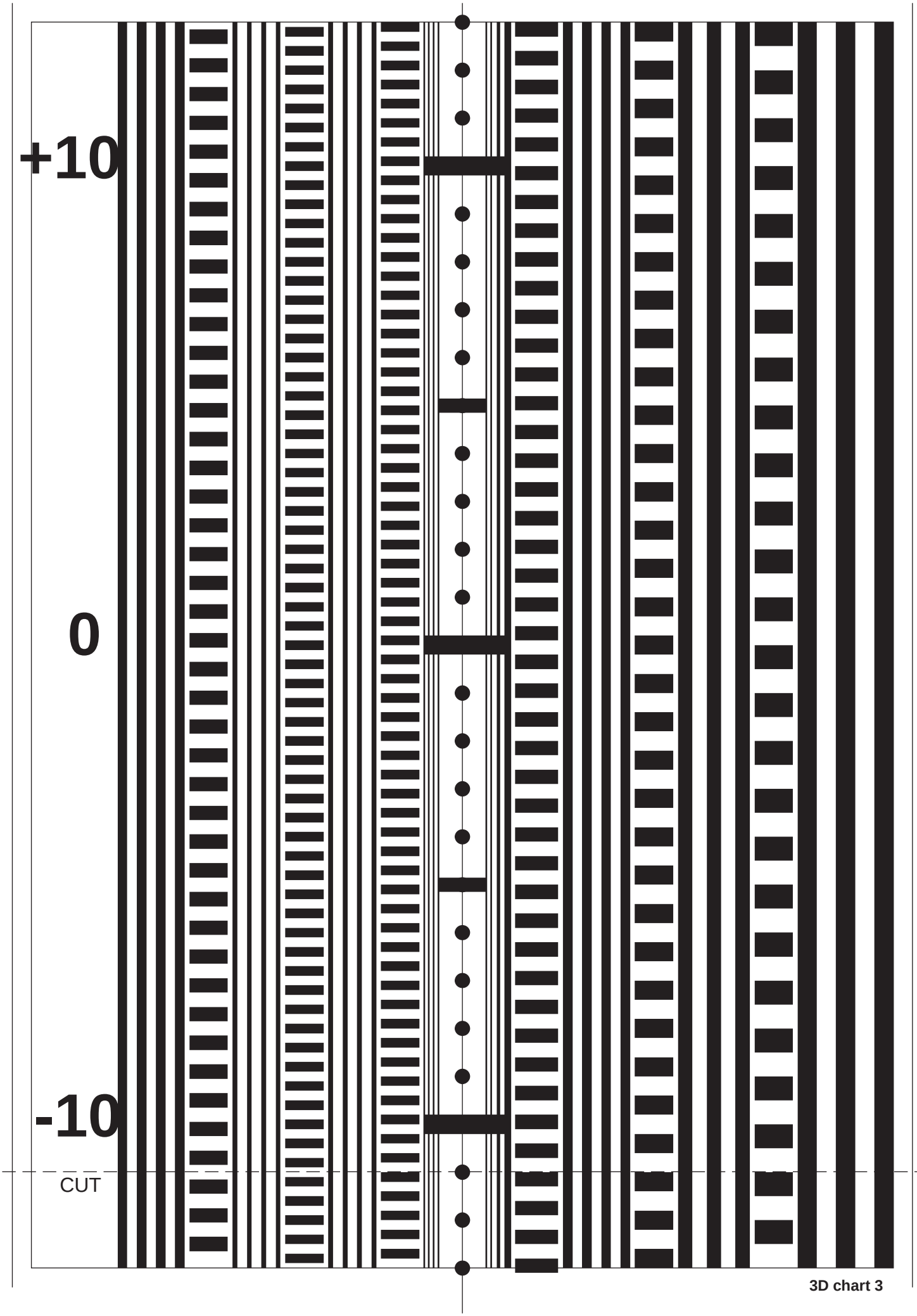
Print size checker



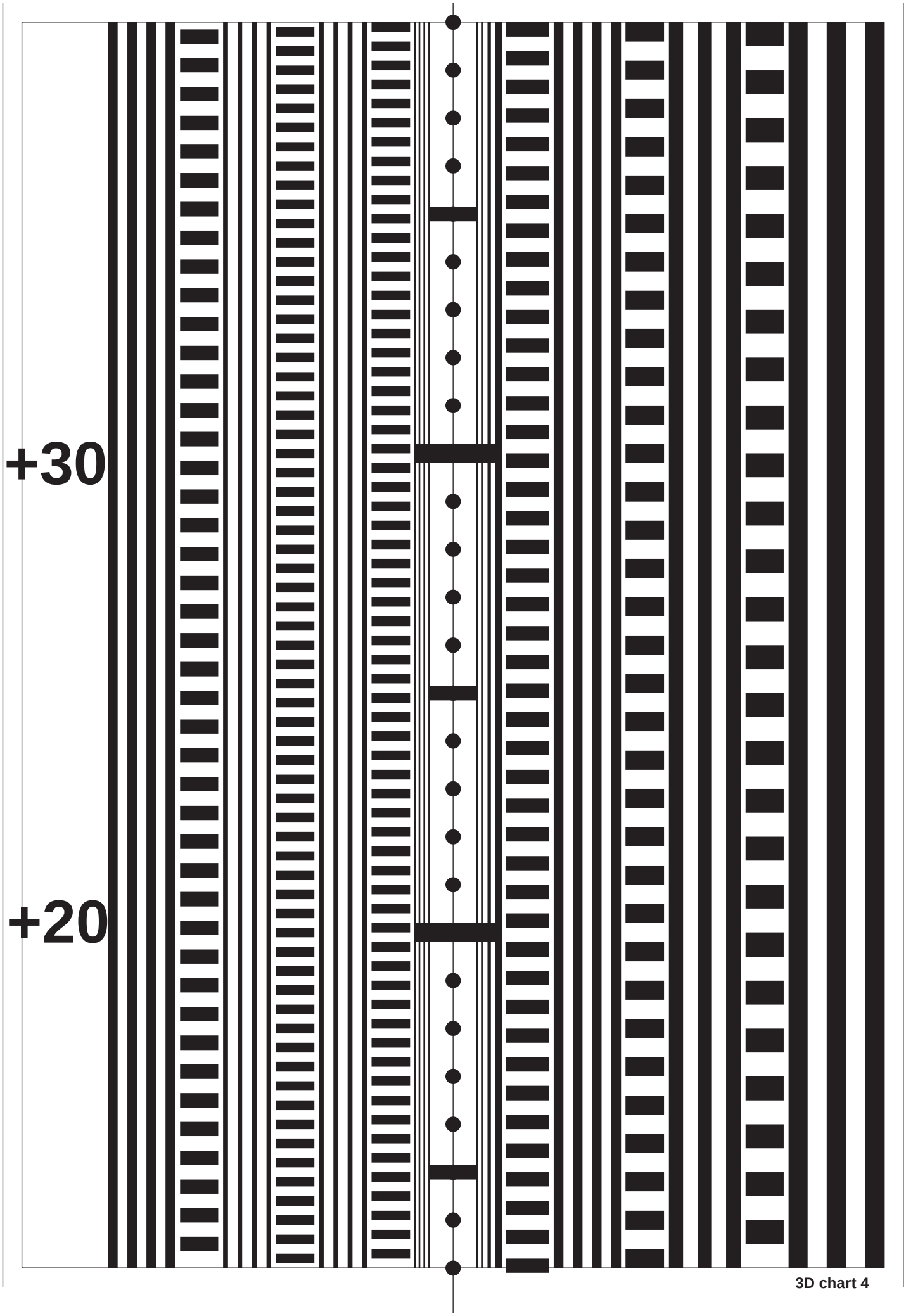
3D chart 1



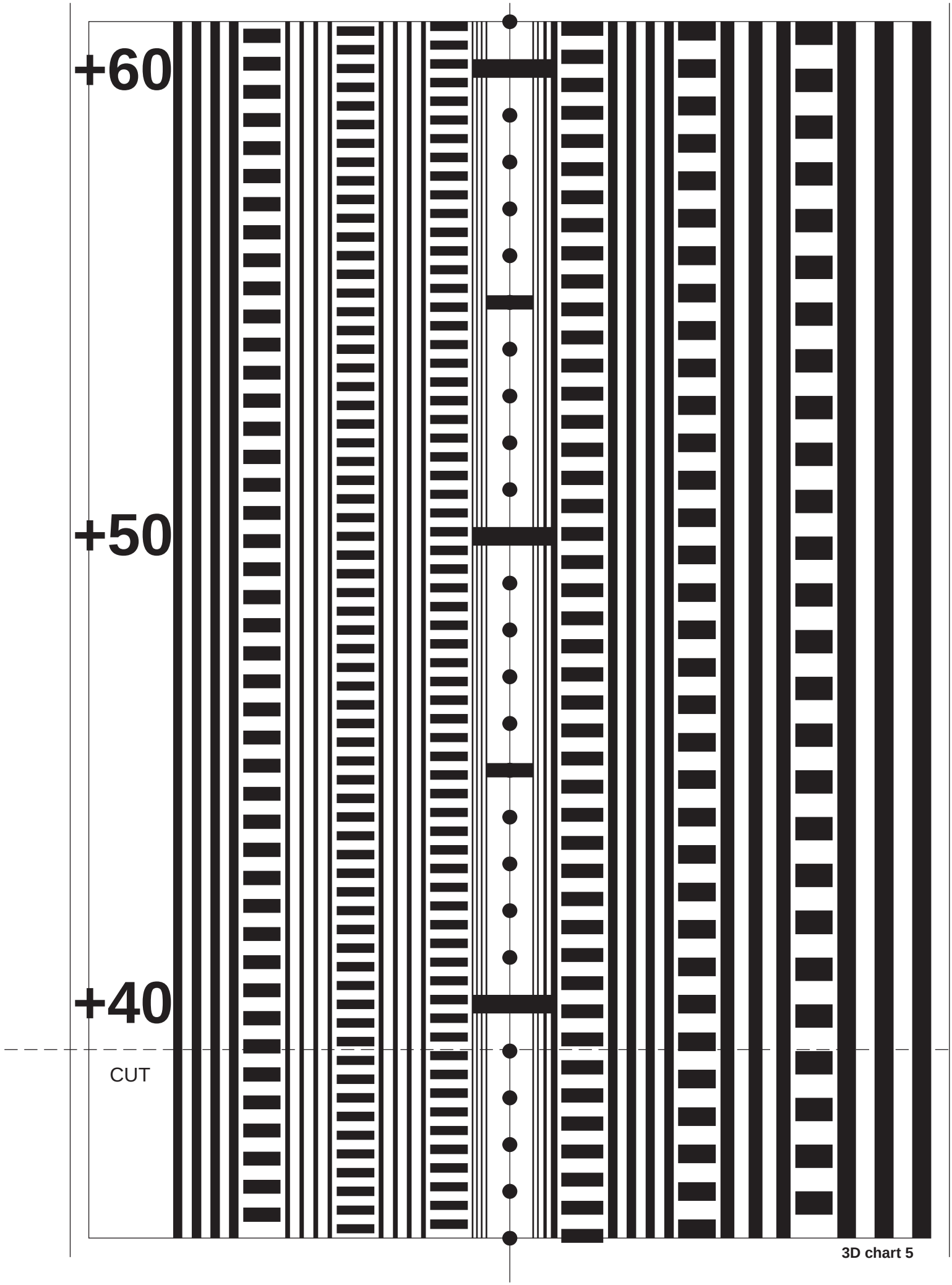
3D chart 2



3D chart 3



3D chart 4



3D chart 5

Canon **SERVICE MANUAL REPORT** Report No. ACD-0054 1/3
Date : July, 2002

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CCI Products Support Dept., CENV

CANON EOS D60

Service Adjustment Software Upgrade (1.1 → 1.2)

1. Reason for Change

Reliability enhancement

2. Details of Change

Service adjustment software (File name: EOS_D60.exe) has been changed as follows.

1) The error code in the service manual is written differently compared to the adjustment software. This has been unified.
2) With firmware ver. 1.0.1 or later, digital error codes are indicated in detail. Please refer to the attachment for the detail. However, in ver. 1.0.1 or later error codes may not be properly indicated unless the error really occurs.
3) When the LCD monitor is ON at the time of shutter release from the adjustment software, a communication error would occur. This has been corrected.
4) Errors in descriptions have been corrected.

User Notice	Internal Error	Contents	Probable Cause and Countermeasure
99	6	This error occurs when the ISO setting is not correct.	・Digital circuit board (CG2-0773-000)
99	8	This error occurs when Image Processor IC (DSP) operates abnormal.	・Digital circuit board (CG2-0773-000)
99	9	This error occurs when the processing time of D60's self-checking system exceeds a specified limit. This could occur when more than one switch is pressed at the same time.	・Digital circuit board (CG2-0773-000)
99	10	This error occurs when "Accumulation → Readout" in the sensor is being processed again before the first completion.	・Rewrite the firmware.
2	21	CF card writing error.	・Use the DC Coupler or recharge the battery. Check if the CF card is properly inserted. ・Format the CF card ・Replace CF card connecter (CG1-1968).
2	22	This error occurs when image data cannot be written to the CF card in the following conditions: 1) If the CF card is not fully seated in the camera, the D60 cannot detect a "card ready" signal within a specified time limit. 2) When the CF card is not usable because it has been destroyed or physically damaged. 3) When the camera's battery level is insufficient to completely write the file to the CF card.	・Use the DC Coupler or recharge the battery. ・Check if the CF card is properly inserted. ・Format the CF card. Replace the CF card connecter (CG1-1968).
4	23	This error occurs when the free space of the CF card is insufficient for the image file that has been created.	・Use a CF card with sufficient free space.
99	25	This error occurs due to a defect in the buffer memory during image processing.	・Digital circuit board (CG2-0773-000)
99	50	This error occurs when the CF card cannot be formatted in the camera.	・Format the CF card (first on the PC and then in the camera). ・Replace the CF card.
99	51	This error occurs when the images stored on the CF card cannot be played back in the camera.	・Format the CF card (in the camera) ・Replace the CF card.
99	70	This error occurs when the image is not proper. (Does not occur to the cameras for mass production.)	・Digital circuit board (CG2-0773-000)
99	71	This error occurs when renewal of internal processing data does not succeed.	・Digital circuit board (CG2-0773-000)

User Notice	Internal Error	Contents	Probable Cause and Countermeasure
99	80	This error occurs in the following conditions: 1) When initial position of X contact and CN2 are not detected. 2) When the shutter operation sequence was not completed correctly. 3) When the built-in flash cannot be recharged after the E-TTL pre-flash but before the main exposure.	・Shutter Defect ・Replace the shutter unit (CG2-0761-000).
99	81	This error occurs in the following conditions: 1) When the mirror-down status with SW1 ON cannot be verified. 2) When the condition of the phase switch is not changed during shutter release.	・Clean and check the phase switch ・Replace the mirror box unit (CY3-1394-000).
99	82	This error occurs when the built-in flash cannot be charged.	・Charging circuit base or main capacitor defect. ・Charging defect could occur even with X-contact short circuit.
99	83	This error occurs when the built-in flash's pop-up signal cannot be detected even after requested three times.	・Top cover
1	84	This error occurs in the following conditions: 1) When electronic communication with the lens in main SW ON or SW1-ON condition cannot be established. 2) When the lens diaphragm cannot be controlled during shutter release.	・Clean the electronic contacts on the lens mount. ・Lens defect (main circuit base, EMD etc.)
99	85	In case of communication error between digital board and camera's MPU.	・Digital board ・Camera main board
99	86	In case of communication error between digital board and camera’s MPU.	・Digital board ・Camera main board
99	87	In case of damage or abnormality in the digital firmware. (Does not occur to the cameras for mass production.)	・Rewrite the firmware.